

THE
SOUTHERN AGRICULTURIST.

APRIL, 1832.

PART I.

ORIGINAL CORRESPONDENCE.

ART. XXXII.—*Observations on the Gama Grass and making of Wine: by THOMAS SPALDING.*

"February 11, 1832.

Dear Sir,—I have received your letter of the 29th of January, and shall, with pleasure, make a reply to your correspondent upon the subject of Sugar Mills, &c. as soon as reflection and opportunity permits. But, as I am fearful that my letter may not be in time for your next *Agriculturist*, I will avail myself of this opportunity to say to "A Subscriber," and to your readers; that at length a book of real value, upon the growth and manufactory of sugar in all its varieties, has been compiled and written by Mr. Porter in London, under the patronage of the Board of Trade of England; this book (a single volume) has been reprinted in Philadelphia, and is for sale in our book stores.

This publication shews what my letters have too often intimated, that there had been no improvement, but an actual falling off in the preparation of raw sugars for fifty years past: the knowledge of the world upon this subject is embodied in this book, and I cannot recommend it too highly to yourself, Mr. Editor, and to your readers.*

* It was our intention to review this work which we have had some little time in our possession—circumstances have prevented. We may yet do so, or at least give copious extracts from it.—*Ed. So. Agr.*

Like others I have been greatly interested with your papers upon the Gama grass, and no doubt like others, was puzzled and perplexed (having no figure of it) to select it from others of our native grasses of gigantic growth. Three several times I collected seeds, and three several times became perplexed in my determination as to the right one; when the note, the very editorial note to Mr. Ellison's letter, chased away all mystery upon the subject: yes, Sir, the Gama grass, is a species of Guinea grass, and well might the seed of the one be mistaken for the seed of the other. The Gama grass does not stand up so erect as the Guinea grass, but it becomes recumbent only from its great succulence, softness and richness. But I will proceed to satisfy you: three times in my life I have cultivated Guinea grass from seed from the West-Indies. Twenty years ago I had an acre of it growing in some low land, as usual I lost the seed the next winter; some years after I noticed a grass so much like it, on the same field that I called my overseer to the examination, and it was with difficulty I was persuaded that it was not the same. Your late publication called my attention to the subject; I gathered from this very field a bushel of Gama grass seed and might have gathered twenty bushels, for I have at least twenty acres covered with it. Most of our low lands, whether river swamps, or sea-island prairie land (which is the kind with me where it grows so abundantly) after being cultivated, if broken up in spring, and then left to fallow, produces this grass in great abundance.

But what will be more satisfactory than any opinion of my own, follows:—Lieut. Comt. Tatnall of the *Grampus*, lately returned from Venezuela, brought with him a variety of seeds, which he deposited with a friend for distribution; among them, grass seed greatly extolled by the American Consul, Dr. Williamson, (and called Gama Suta) said to be the finest possible feed for cattle, and growing in the valley lands of Venezuela. Our Consul in his letter says to Lieut. Tatnall that the Gama Suta greatly resembles the Guinea grass of the West-Indies. I will now add, that all this satisfies me that the Gama Suta of Venezuela is the Gama grass of Mexico and Missouri, and it grows no where more abundantly than it does with us, it is softer and richer, I think, than the Guinea grass, and if it will grow on high land, and commence its growth in the spring as your correspondents generally say it will, our pastures will soon equal

any in the world. It was only after seeing the note affixed to Mr. Ellison's letter, and after seeing a little of the Gama Suta brought by Lient. Tatnall, that all doubt was removed as to the identity of this grass. We will try it another year upon high ground soon in the spring. I enclose you a little parcel of the Gama Suta, which I assure you upon my honour, came from Venezuela.*

With the aid of a friend, I have made a pipe of wine, and might have made three times as much, if I had gathered my grapes in time. I think it will be a tolerable wine, but some time since my operations, I received some information from a gentleman, a native and resident of Madeira, himself attached to one of the most distinguished Madeira houses. What do you think of from 10 to 15 gallons of 4th proof brandy to the pipe; the brandy is introduced during the fermentation, to moderate, not to prevent fermentation; the quality of strong wines depend, it seems, principally upon two points, the length of time it takes to complete its fermentation, and the capability of purifying itself, without other mixture. To make dry wines, brandy must be substituted in the place of sugar. Of course poor juice will not make good wine under any circumstances. Six weeks is required to complete the fermentation in Madeira, and the brandy is added from

* Mr Spalding is no doubt aware by this time, that a typographical error was committed in the note referred to, by him. Mr Ellison's remarks are applicable to the true Gama grass, and not to the Guinea grass. There are no doubt many very valuable native grasses, which grow in almost every section of our country, and which are entirely overlooked by our planters, whilst they are searching for exotics, and making various experiments to ascertain their adaptation to our climate. These, perhaps far more valuable, and better suited to us, are neglected for no other cause than that they are found growing wild and in abundance. So apt is man to refuse the good which is presented to him, and pine after that which is beyond his reach. We have frequently heard our planters extol the clover fields of the North, and lament in doleful terms the want of some such plant to stock our pastures with. We have always thought this injudicious and misapplied. We have indigeneous grasses which will produce as great if not greater weight than the clover does at the North, and we believe if ever we are forced to raise our own cattle and manufacture our own butter and cheese, that it will be found that we can do it with as little, if not less cost than our Northern friends. In a note we could not treat the subject as its importance demands, we may, however, at some future period, take it up. In the mean time we request the favour of Mr. Spalding, (if convenient for him to do so) to make some experiments with the several varieties of luxuriant grasses which grow in his neighbourhood, especially the one he supposed to be the Gama grass. We have examined the seeds which he has sent us, and we can discover no difference between them and the Guinea grass, (as far as we can recollect the latter for we have none by us at present, but have often had it, and some very lately.) We will sow them sent and then compare the two.

Editor So. Agri.

See vol. 5 p. 587.

time to time during the process; if there should be any sensible acid after the wine has become clear, half a gill of slacked lime is thrown into the pipe, and the liquor is, twenty-four hours, after drawn off into other vatts or vessels, where it should remain a year or two before it is bottled. The brandy being mingled with the grape juice during its fermentation enters into it, is absorbed and embodied, and becomes a whole. As to the real strength of the liquor for intoxicating qualities, it matters not whether sugar or brandy is employed. But it is difficult to know how much sugar the grape juice will digest before it runs into the acitus fermentation, and some portion of it generally remains in the wine complexioning its flavour.*

Another circumstance surprised me, they plant in Madeira long cuttings in trenches from six to seven feet deep, these deep trenches are filled up with earth to the top, leaving but an eye or two, and the plants rarely perish, and in their deep trenches are protected from the changes of season. You will remember Mr. Clarke of St. Augustine, recommended deep planting of vines, with the same motive.

And, I remain, dear Sir, your obedient servant,

THOMAS SPALDING.

ART. XXXIII.—*Observation on the culture of Cotton and Silk:* by J. B. BREWER.

"West-Filiciana, (L.) Jan. 12, 1832.

Sir,—In compliance with my promise to communicate such information as I should be able to obtain from the actual planter here; permit me to remark that, having delayed

• The following extract is from a well written letter to the Editor of the London Mechanic's Magazine, which you will find in the May Number for the year 1831.

"Now, Sir, in every pipe of port wine shipped to England, there is never less than 16, 18 or 20 gallons of brandy (old measure) of the strength 30 ps. above proof, which has been *fretted* into it by the cooper." I have underlined the word *fretted* because I consider the word used to shew, as my friend from Madeira says that the brandy should be added, during the process of the fermentation, and not afterwards. The writer of this letter says this is the result of experience upon more than 20,000 pipes of port wine.

writing until the present time, enables me to be more explicit on the subject; having it in my power to set forth the contrast produced by the difference of season, which is very great in the two last crops. With respect to the manner or mode of actual cultivation in preparing the ground with the plough and hoe, very little difference prevails. The general, and that which is considered the best mode is, tolerably deep ploughing by bedding with three furrows, and before planting, adding two more to the first, making five furrows to the bed, when fully prepared for sowing the cotton seed—the middles or balks are ploughed up after sowing. This manner of procedure is thought best, having the tendency of keeping the ground loose and preventing its baking or becoming packed hard by rains—and also prevents its wasting as it otherwise would do.

After the cotton is up it is scraped and cut out as is a general practice in Carolina as well as here. The plough is kept in constant use, throwing earth to and from the cotton (assisted by the hoe) while the plant will permit. It is thought best generally to keep the earth continually stirred and loose—this is a general opinion. Some of our planters think best to plough continually in the early time of the crop, and to cease ploughing when the lateral or sunshine roots begin to spread in the space between the rows, supposing that by cutting the lateral roots, an injury is done to the plant by weakening its powers which causes the plant to shed its forms more abundantly than it otherwise would—this is an opinion of one of our most extensive planters here. As respects strict attention in dressing the crop; the planters who were raised to the business in Carolina and Georgia, and who have followed the profession here many years, are of opinion that your planters in Carolina and Georgia pay stricter attention in dressing their crops than is generally done here; but they think (and very reasonably too) that the climate and soil produce a very great difference in the crops of the two countries; this section of country being more congenial to the nature of the cotton plant. After all we can say, respecting the mode of culture, climate, or soil, much, very much depends upon the favourable or unfavourable seasons, and the time of planting being suitable to the season that may ensue; or accidents by untimely and destructive storms that may take place as has been the case the season past. Please refer

to my remarks on our crops in Louisiana and Mississippi for 1830. I there stated in the most modest manner I could, that a general average was six, or from five to six bales per hand. All who have talked with me on my remarks, say, that I should have stated six bales per hand without any hesitation, that being as low as would be correct. I further stated that some reported ten and some eight bales. Since I made the above statement, several persons have declared that they made ten bales to the hand, and that they were acquainted with several instances of the same number having been made on Red River, Bayou Boeff, and in the Yazoo purchase.

Now, Sir, with the above crop of 1830, let us contrast the late crop of 1831. In our section of Louisiana, the crops generally displayed a greater prospect and presented a more flattering appearance of a heavy produce than perhaps was ever known in North-America; this is the opinions expressed by our best and most extensive planters. This prospect continued to be thus flattering until the heavy storms commenced in July. A day or two before the storm commenced, Major W. R. Barrow, in his own crop, accompanied by Col. William Barrow and myself, witnessed a single plant, of inferior size, to contain two hundred and thirty forms, or there about; from which we concluded that some plants which we noticed contained at least three hundred forms. The prospect of his crop bid fair for six hundred bales, having in culture more land than the year before, in which year he made above five hundred bales. (But, Sir, man is born to disappointments, his hopes vanish with the fleeting wind, he can no more control events than he can command the raging storm, he must submit to the control of providential events as they occur.) In my remarks respecting the storms in which we suffered severely, I will note three singular instances—the first, which was severe and destructive, commenced on the 29th of July, and lasted two or three days, it was at least three days before any business could be done; it swept the crops severely, laying the cotton plant prostrate, and washing off many forms, and burying many lower bushes in the mud. The second and still more severe and destructive storm commenced on the 29th of August, and extended its destructive effects far beyond the first; attended with heavy wind beating off the cotton forms, in a manner stripping the principal parts of the plants; in the low

grounds along the Bayou Sarahs, whole fields were destroyed both of cotton and corn. The rise of the water was from twenty to twenty-five feet above the bed of the creek. A third injurious storm commenced on the 29th September, which also did much damage. Thus we see our highly pleasing prospects swept away by the elements, as in the three successive storms singularly commencing on the 29th of three successive months; our planters do not realize a third of a crop or not more as a general average. Thus we see the effects of seasons and accidents, or events favourable and unfavourable. For further and more correct information, I submit to the actual planters to stand corrected in any error if any are herein stated.

Silks being my second article, I have but a few remarks to make, owing to the want of experience. I kept my eggs last year in a trunk, intending to hatch them in April or May, but I discovered them hatching and creeping about my trunk in March; I was under the necessity of attending to them immediately. The bud of the common mulberry had but just set forth its germ, I found much difficulty in procuring food sufficient for them. I, however, by assiduous attention and rambling the fields, made out with the small number which I had (being from 12 to 1400 worms) they magnified rapidly, continued healthy, and devoured the leaves with avidity; thus they continued to feed and grow I think about six weeks; they were, however, somewhat retarded in their growth by several quite cold spells. The room in which I kept them, was much exposed and open, having no fire they appeared chilled and inactive, but ultimately they were extended to about three inches in length; in fact, I measured several with a six inch scale, and found them three inches in their natural extent full measure. At this size they were semi-transparent, became less disposed to feed, and soon shewed signs of spinning, leaving fibres of silk in their train. Thus, as they began to spin, they also began to contract, becoming shorter and thicker, this effect continued visible till they were enveloped in the cocoon so as not to be seen. I found the mice troublesome, they destroyed many cocoons by cutting through to get the chrysalis—the ants also would cut through for the same purpose; and another formidable enemy was a large insect called the buffalo gnat, these troublesome insects were hard to guard against. They attack the worm at the

time of spinning or a little before; cut through the stomach in some instances, and let out the gelatinous silk, now matured for spinning—(out of evil cometh good; let us be content with small injuries, since from them the discerning eye learneth wisdom to evade, and knowledge to apply them to advantageous uses. I beg your patience and I will explain myself.) I one morning discovered a large full and very healthy worm handsomely guillotined; his neck was cut through close to the head, hanging by a small fibre on the underside; to put him out of his misery I threw him on the grass by the side of my room, I drew my foot over him and instantly discovered two globules of gelatinous matter lying on the grass, transparent, very consistent, tenacious, and of a bright yellow gold colour. I took it up on a stick and by applying another small stick, I found it very adhesive, and by extending one from the other it spun out into a fine thread becoming smaller as it was extended. In this extension of the gelatinous fibre, I discovered that the fibre became more brilliant as it was continued exposed to the action of the atmosphere, and finally became equally consistent with the fibre spun by the worm but not so even, I presume for want of his delicate spinning instrument through which he draws his thread.

Now, Sir, please reflect with me—may we not conclude that, the consistency of the fibre is obtained by contact with the atmosphere, from oxygen, or some other property of the common air? Please answer this when by your better philosophical knowledge it may suit you best. I ask for information. I collected more of this matter from other injured worms—when dry it becomes hard and appears much like the dried yolk of an egg. These few instances reminds me of Chaptal's remarks in his Chemistry, of reducing silk like other animal matter to a gelatine.

My worms made me between nine and ten hundred cocoons; they were of different sizes and colour, mostly of a bright straw colour and some of a deep orange. The silk was of a lively and shining texture, very strong, and I thought as handsome as any silk I had been informed of. They made their cocoons on bushes. For the use of further prosecuting the business, I suffered them to hatch. I have on hand about one hundred thousand eggs; but my health is now such, I am afraid, I shall not be able to do much with them myself the ensuing spring. I have given many of the eggs away.

I am confident and perfectly satisfied that Louisiana will, with attention, produce as good silk as any country whatever, it only wants proper encouragement; our market ought to be nearer to make it profitable. We ought to learn to be able to reel our own silk. Enclosed, I forward you a specimen of silk, handed me by a Mr. Collier, found in the wood, discovered by being extended from bush to bush; the fibre as found, you have, run through paper with a needle, I think about four feet in length, which is a part of the whole length taken, which Mr. Collier told me it was fourteen feet in length. The texture and colour (is in the sunshine) as brilliant as gold, and is the strongest fibre I have ever witnessed in any matter of a similar nature. A Mr. Hoff in company with Mr. Collier, passed between two bushes to which the silk was attached; it took his hat from his head, by which means it was discovered. I know not what insect makes silk in this manner, but it is supposed to be of the spider family, by some who state they have seen them. If you can give information respecting this subject, I should be glad to be informed. I found a cocoon a few days since in an old field of a bright yellow colour, whose fibre and texture excels in fineness and softness any thing I know of, or ever beheld; it is not hatched, I intend keeping it for information, it is about two-thirds the size of a large cocoon, and shaped like them, it is enclosed in a leaf. Sir, please inform me in your next where I can obtain some of the Eastern or Turkey Poppy seed.

Yours, with esteem.

JOSHUA B. BREWER.

ART. XXXIV.—*On the Culture of the Grape Vine and Fruit Trees*; by S.

"Beaufort, January 3, 1832.

Dear Sir,—Having again returned to this place, after an absence of several weeks, I take the first opportunity of replying to your inquiries respecting my mode of cultivat-

ing the vine. This I shall do as briefly as possible, my experience being to limited to impart any information on this interesting subject, that might not have been better obtained from other sources. Having cultivated the grape, only as a table fruit in my garden, my mode has been to train the vines to an arbour, at the distance on each side, of from seven to nine feet apart, (as they may be of the large or small kind) taking care to make the holes large and deep, for the reception of the roots, into the bottom of which is spaded some of the best light soil I can procure, and, the roots covered with the same to within five or six inches of the top; the hole is then filled with the poor soil from the bottom. My next step is to head them down, leaving but two eyes above ground, (this of course applies only to young vines, which are the most suitable for this purpose) and when these start in the spring, carefully to train the shoots to the sides of the arbour, so as to prevent their being broken or otherwise injured, by high winds that usually prevail at that season—in the winter they are trimmed in proportion to their strength, and trained to the top of the arbour, which they will completely cover, if of the large growing kinds, in the course of the ensuing summer; all the roots near the surface of the ground are carefully removed at the time of pruning, and when the fruit be fully grown or turning, should the weather be very dry, the vines are watered frequently, a little before sunset, during its continuance. This is the only precaution I use as a preventative of the rot, which I think the result chiefly, if not altogether, of too much moisture, particularly, after a long continuance of dry weather. I cannot, however, say that, this more than partially remedies the evil, it certainly does not prevent it. As it regards our native vines as stocks to engraft foreign varieties on, I am persuaded you will find none better. Some years since, I obtained from the North a number of foreign vines, which I planted with their own roots, from some of these, cuttings were taken and grafted on native stocks; the imported vines after a few years, died, while those grafted from them on native stocks, are still alive and bearing. I merely state the simple fact, leaving you to draw the inference. My method of grafting has been chiefly in the cleft, which I prefer to boring, as equally expeditious, and, perhaps, more certain. I have succeeded in both ways, always ingrafting some inches be-

low the surface; but, except the stock be very large, I should prefer cleft grafting to boring—several experiments were made here the last year, by boring into the stock above the ground, but they all failed. I tried the same upon large roots separated from my old vines and shortened so as to leave but one eye of the graft above ground; these grew vigorously, and will bear the present year. The time I prefer for the performance of this operation is, as soon as the bud of the stock begins to swell, but the graft should be cut some time before wanted and buried in some cool situation, where they will not be likely, too soon, to vegetate. I have thus endeavoured to answer your inquiries, as to any mode of treating the vine. I am not aware that it materially differs from that practiced by others, or that it contains any thing of sufficient importance to entitle it to a place in your *Agriculturist*; it is the hasty production of one, who has himself much still to learn on this subject, and who would, therefore, prefer not appearing before the public.

On the subject of fruit trees, I am unable to give you much information. I usually propagate them by budding, which I think preferable to ingrafting; this on small stocks, I perform near the ground, that the bud may form the body of the tree; this is the only mode I adopt with peaches, apricots, &c. except the common one of planting the nuts. With pears and apples I concern myself but little, as they do not succeed well, except in particular spots. As regards pruning, I should myself be glad of some information, certain it is, that I feel incompetent to impart any thing of importance on the subject.

Yours, respectfully,

S.

ART. XXXV.—*On the Culture and saving of the seed of the Ruta Baga Turnip: by Z.*

“ St. Thomas', July 20, 1831.

Dear Sir,—I regret that it is not in my power to answer satisfactorily all of the questions, proposed relative to the culture of the Ruta Baga Turnip and the saving of the seed; all of the information I possess is at your service. About the middle of July, I prepare the land intended for turnips, by covering it three inches deep with rotten manure, which I turn in with a spade or narrow hoe to a considerable depth. Small beds, or rather a list in them thrown up, and the seeds are planted in holes eighteen inches distant from each other, and in each hole five seeds are thrown. They soon make their appearance, and if the season is propitious, grow very rapidly. When the turnip has reached the size at which cabbages are usually set out, they are transplanted (into beds prepared as stated above) leaving only one at each interval of eighteen inches. The hoe is soon required and I never allow them to be hoed out or hauled down; my work is to enlarge the bed. In a short time the beds will crack, as the root potatoes often do, and then they must be hauled up again; this process is to be repeated frequently, until the severe cold of winter puts an end to the growth of the plant. By this time the turnip will weigh from eight to twelve and a half pounds, when entirely deprived of the foliage, which certainly will be equal to three or four pounds more. It would not, I think, have been difficult for me to have exhibited fifty turnips weighing ten pounds each, and a hundred weighing eight pounds, but the difficulty of carrying them to town prevented my appearing as a candidate for one of your premiums.

I have not habitually fed stock upon them (except milch cows) as the plantation on which I live, supplies me amply with straw, rice flour and fodder; but my deliberate conviction is, that an acre of Ruta Baga Turnips will yield more food (in weight) for cattle, than any other article upon which they are fed, potatoes excepted, and I am not certain that even this valuable root should be preferred. For domestic or house use the turnip furnishes a most delightful vegetable, it is not coarse in proportion to its size, but the reverse, until they begin to seed. The foliage is a delicate and

tender "green," quite as good as many kinds of cabbage, and is delightful when converted into the broth known among us country folks as "*pepper pot*."

As regards the saving of seed, I am not so well informed as I ought to be, yet I assure you that, that saved at home is much to be preferred to that imported from the North, and this last is better than the English. My experiments were not made with a view of testing the comparative excellence of the imported seed and that raised at home, but my attention was called to the circumstance by the gardener, who is so much prejudiced against seeds not raised in his own garden that he would undoubtedly, if a voter, be a tariff man, and rejoice to see high duties laid upon imported seeds.

So far as I recollect, the insects to which you allude, do not attack all of the turnips equally; some apparently offering no temptation to these epicures of the garden, while to others they exhibit the greatest devotion, and never quit until they have literally eaten them up: why this should be the case I am unable to say, but of the fact I am certain. This being the case, the quantity of seed saved is of course small, in proportion to the number of plants left for this purpose, yet I have always been enabled to obtain enough for my own use, as I only plant them in my own garden.

Z.

ART. XXXVI.—*Observations on the Management of Negroes; by a PRACTICAL PLANTER.*

"Mount Vintage Post-Office, S. C. February 20, 1832.

Mr. Editor,—The brief remarks that are now offered for insertion in the '*Agriculturist*,' are intended to point out to the cotton planters in the upper country, the error they have so long committed, in allowing their negroes to plant cotton, and I hope to be enabled to prove to them, that not only the moral condition, but the comfort of the slave will

be benefited by the prohibition of it. It is well known, the indolence of negroes is such, that they will not give that attention to the culture of cotton which is requisite to make it productive; this is exhibited to view, wherever negro-fields are seen; besides, they have no incentive from this indulgence, knowing where to make up the deficiency of their own crops. If they do not secrete a part of their daily pickings, their master's gin-house is resorted to; and even ginned cotton has been frequently rifled from the bales; and, in more instances than one, whole bales have disappeared after being stripped of their covering, and sometimes covering and all.

It requires no magic to determine how this cotton is disposed of. Where there are no receptacles there will be no deposits. On the sea-board of the lower country, where negroes are not allowed to plant cotton, days' pickings are often left on the scaffold all night, and seldom or never are depredations committed. Can this be attempted with us where even locks are no security? And what do the depredators get in exchange for this purloined property?—half-price, probably in whiskey, (which cost from thirty-five to forty cents per gallon) well diluted at the rate of one hundred cents a gallon, or some other trash of goods at the same rate, which they are compelled to take from fear of detection; and this kind of commerce must be carried on towards the dead hour of the night;—the slave returning after the delivery of the plunder, perhaps half if not wholly drunk, is disqualified to perform his work the next day—in consequence of the loss of sleep, he goes to work carelessly, imperfectly executing the work, and may incur the sting of the lash. It may be observed that corn also may be stolen; but it must be recollected that it is not so portable an article, of much less value, and more easily detected. A negro that would take one hundred pounds of cotton, in seed, worth two dollars, would hardly venture on the same weight of corn worth only seventy-five cents. A neighbour, who has never suffered his negroes to plant cotton, assures me, that they have realized from their corn and fodder from thirty dollars each, down, according to their industry. and that they are under more moral condition, than those who are allowed to plant cotton. I doubt if any other neighbour can say the same of cotton if fair means have been used. It may also be remarked, that the privilege of gain-

ing time is injurious to the slave, and impolitic in the master. It is within my own observation, that such gain has amounted to one day in the week, and more in some descriptions of work. Was this time appropriated to their own benefit, it would be laudable in the master in granting the privilege; but, in order to gain this time, the work is hurried over and imperfectly done, and instead of working in their own fields, they are found visiting other plantations; where this is not allowed, creating discontent, or at places of dissipation, where they lurk about until this gain of time is disposed of.

With regard to this description of people, every indulgence should be extended to them, as far as it is for their own benefit, exacting from them no more than a reasonable day's work, and that by task-work as far as it is practicable, according to the ability of the hand, and not row by row, or hill by hill, as is customary, where the effective hands, when they make any exertion, exhaust the weaker ones in keeping up with them, and when this effect is produced, work at their leisure, keeping a little ahead of those who follow, and as their pace slackens the others respond.

When the work is done that has been allotted them, there should be no calls on them, except in cases of necessity; their own time to be applied as they may wish, but that on the plantation. When the crop of corn is gathered in, it should be under the direction of the master, and disposed of by him, and the money paid over to each claimant, according to his due; in this, more justice will be done them than if disposed of by themselves, which is always at a less price than can be obtained by the master, and that in traffic. Every one that has any thing to do with negroes must know, that they are not capable of managing, and that if left to themselves would not obtain a support. This is evidenced by the false philanthropy by which our Northern brethren have been actuated in encouraging them to flee to their country for emancipation. And what has been the result? Look at their prison-houses, and the returns which have been made by the keepers of them, and it will be found that more coloured people are the inhabitants, than of any other description: and what attempt do they make to get rid of this pest, that has so much accumulated upon them—invited by their laws of manumission?—They propose that the General Govern-

ment should assist in the colonization of this people in Africa, or elsewhere, and that the Southern planters, after having been deprived of their property, should contribute to their removal—preposterous! Let those States who have invited these people under the colour of ameliorating their condition, bear the burthen, and pay for their removal, and not exact from those who have been rifled of their property additional injustice.

A PRACTICAL PLANTER.

ART. XXXVII.—*Remarks on the Influenza (Catarrhus a Contagione) of 1831 and '32; with a simple mode of treatment; by* THOMAS FULLER HAZZARD.

“West Point, St. Simon's Island, (Ga.) Feb. 1832.

Mr. Editor,—

Experientia docet omnia.

Agriculture being the pursuit, and principal dependance of the Southern planter, it follows that we are not only deeply interested in the preservation and general improvement of our soil, by every possible mode, and manure but our existence as a people is inseparably connected with the health, prosperity and longevity of our slaves. They are, indeed, a *sine-qua-non* to Southern prosperity, without whose co-operating agency our Carolina and Georgia would very soon return to its original state of barren wildernesses, and impervious forests.

The present winter has been marked by singular and most extraordinary extremes; excessive heat and intense cold have followed each other in rapid succession; and we feel most sensibly its baneful influence in the unusual degree of sickness which prevails amongst our black population. At this very moment, I hear from every quarter of innumerable cases of influenza, and very many of a complicated and dangerous character. This ill-fated pestilence appears to assail all ages, sexes, and habits; the

saint and the sinner alike ; very few have escaped, and a larger number have been summoned into eternity, through its malignant agency.

Having carefully observed for the last ten years, that our slaves have been more subject to violent disease, and even untimely death, during the winter months than they were all the remainder of the year, I have thought that it would be highly acceptable, if each planter, or his agent, would from time to time communicate a plain and faithful history of the health of their plantations, the character of disease, and the treatment which has actually been found most beneficial.

For the last ten years we have not lost a single adult slave at West-Point, St. Simon's Island, except by accident and extreme old age. Children, and young babes have suffered, and some of the latter have died, in that period.

During the present winter we have had extraordinary sickness, and some very severe and dangerous cases, to which these remarks are only intended to apply.

I have found that bleeding black people indiscriminately was a very doubtful remedy, and ought to be carefully determined by the constitution and habits of the sick, much more than the general character of the disease. For example, the present influenza, which has been strongly accompanied with symptoms of a typhus character in several instances. Some slaves appear more subject than others to pneumonic and peripneumonic diseases : I have noticed that all such were seldom benefited by bleeding, especially large, *horse* bleeding, as some persons practice. From all such animal vampires, "good Lord deliver me." On the contrary, as the blood is really considered by many *vim haberis vitalem virum*, to exhaust this essential too suddenly and imprudently, is like pulling down a man's fence when his crop is but slightly injured by March winds—a short and most effectual way to destroy the whole field. And so no doubt it hath resulted to many an unlucky and ill-fated patient. You may, therefore, infer, that we bleed very seldom on our plantation, although it is not entirely "tariffed"—that is, prohibited.

As I am intimately acquainted with the constitution and habits of our slaves, the treatment of their disease is always

regulated by this circumstance. When first attacked by influenza, the symptoms of which are so familiar that it would be unnecessary to describe them, I begin with an active cathartic, composed of powdered jalap, thirty to forty grains; common saltpetre, an equal quantity. If pain in the breast, chest, or sides, be felt, a large blister or mustard plaster follows, and is repeated, as it is all important to continue on the defensive until the enemy changes his position, and even then to force and hasten a speedy retreat. Mustard plasters are exceedingly useful—they are more immediate in stimulating the skin. Flaxseed tea, boiled thick, is then ordered for their diet-drink, and thirty or forty grains of saltpetre are generally added to every pint of tea, sweetened well with Georgia syrup of our own make—honey I have found much better whenever it can be obtained. Where the pulse is small and tremulous, as I have observed—skin dry—the cough frequent, hard and distressing—the following pectoral mixture is given at night: antimonial wine two parts, laudanum one part, mix well and give one or more teaspoonsful in flaxseed tea as before mentioned, or in Iceland-moss tea (*lichen islandicus*) which I have found highly useful. If no antimonial wine is at hand, a solution of tartar emetic, two grains to an ounce of hot water, substituted in the above proportions will be found to answer very well. Gum Arabic is also a most solid and excellent auxiliary, and will often give relief of itself: in two or three days it allays the irritation and softens the cough in the happiest manner. Having experienced the beneficial effects of gum Arabic repeatedly in my own case, I can most positively recommend and urge its greater use to others. When the lungs are oppressed and expectoration slow and hard, small doses of powdered hippo, conjoined with the syrup of squills is given in the morning. I have also found much benefit from the use of snake-root and pepper tea. With these simple remedies persevered in from day to day, we have thus far invariably effected a cure. Castor oil in small quantities is also invaluable. But mucilage: mucilage! cannot be too earnestly recommended, not only in present influenza, but in fevers and all pneumonic diseases in general.

When the patient recovers so as to be able to resume his labours, if the cough continues and his lungs appear weak, I use a strong tincture of myrrh, and give from one to three or four

spoonsful in a small quantity of Iceland-moss tea per day. This is a safe and excellent remedy; will often arrest incipient consumption, and restore the lungs to a sound and healthy condition. It is in fact very far superior to some of the present remedies: prussic acid, for instance, which would poison Old Nick himself, if he could be forced to swallow a sufficient quantity. I have never heard of any person surviving the continued use of such virulent poisons, except that emissary of Satan, monsieur le Frenchman. Those who give prussic acid forget the golden rule—"Thou shalt do unto others as we would wish them to do unto us." I am strongly suspicious they could not be persuaded themselves to make this poisonous experiment.

In making these remarks, my object is not to lay claim to any new discovery, but rather to prove; that it is best for us to adhere to the plain and simple old path which our fathers followed. For the influenza is not a new disease, it has, and will continue to appear time out of mind. If your subscribers would adopt the example, and give the result of their experience for the last ten years, in the various sections of the Southern States, especially a faithful account of all cases, and the treatment which has terminated in death, it might be a useful and important beacon by which to guide our course. The lives of our slaves are not only our all, but they are endeared to us, by many kind and active associations, and there are none of Southern birth who does not feel a lively joy and satisfaction in their comfort and happy old age. A good hospital for their accommodation when sick, is a great desideratum—many persons have already established them, and I hope they will be gradually adopted and finally seen on every well regulated and well managed plantation. The first expense would be only a trifle, compared with the comfort and advantage it would afford.

If you consider these imperfect remarks of any use, you can insert them in your useful periodical. I hope others better qualified and more experienced than I am, may be induced to communicate on the diseases and treatment of their slaves. Much valuable information might thus be obtained, and the lives of many preserved and prolonged.

On the 2d of the present month, (February,) a negro man was bit by a rattle snake with six or seven rattles, on this island. No physician attended him. The chloride of lime was sent, but if tried, it was in all probability too late.

The first opportunity which I have will make a fair trial of this most powerful agent, and communicate the result.— Although the winter has been so severe; the above negro expired on Saturday the 4th, so it is a dangerous act to meddle with these deadly reptiles at any time of the year. It might be noted, that I only saw the above case a few moments before his death.

Wishing you health and continued prosperity.

THOMAS FULLER HAZZARD.

Addenda.—In the summer of 1830, our old gardener was bit by one of those large black spiders, which generally live in the ground, and are very common in the Southern States. His sufferings were most extreme and agonizing, very similar to the symptoms of a rattle snake bite. Being an aged man, and having been bit high up in the arm, (for he was weeding,) I thought it would have proved mortal, and commenced immediately with large doses of strong spirits of hartshorn—a tea spoonful in olive oil every thirty minutes, alternating, with spirits of turpentine. The arm was careful wrapped up, and kept constantly moistened with the above mixture. Strong seneka snake-root tea was also given—for his thirst was intense. The quantity taken in the first forty hours was extraordinary; however, it finally neutralized the poison, and effected a cure. The said gardener is now alive and in good health; and you may be sure he is particularly wide awake for black spiders.

Pray invite your subscribers to communicate all such cases, and all bites of reptiles which may come under their observation, with their treatment. The chloride of lime, I think, was also used in the above case. This species of spiders are very venomous during the summer, and ought to be avoided as carefully as a rattle snake. Your useful work circulates so extensively that it is very probable that many cases of poisons must occur, and the remedies used would be a valuable acquisition to our security.

ART. XXXVII.—*Observations on the introduction of Long Staple Cotton into Georgia*; by THOS. SPALDING.

Dear Sir,—My friend Col. Troup of the Senate, has just inclosed me, as you will see, the conclusion of Mr. Holmes' speech, which contains a letter from Mr. Richard Leake, the father of Mrs. Spalding, on the subject of cotton, in the year 1788, addressed to the late General Porter, of Philadelphia, which the tariff-men had hunted up among his papers. This letter may be worth publishing in your book, and I need only add to it, that I saw this field of cotton growing, and I believe it was the earliest long-staple grown to that extent; although Governor Tatnall, and Mr. Nicholas Turnbull of Savannah, and my own father at St. Simons, were all growing the Anguila cotton in 1785 and 1786, in small experimental quantities; Governor Tatnall received his seed from his father then in the Bahamas, my father received his seed from Col. Kelsell, his former associate in business, and Mr. Leake, not improbably from his brother-in-law, then resident in the Bahamas.

Yours, with esteem, &c.

THOMAS SPALDING.

"*Cotton*.—In 1788, Richard Leake, Esq. of Georgia, thus writes to Thomas Proctor, Esq. of Philadelphia: 'I have been this year an adventurer, (and the first that has attempted it on a large scale,) in introducing a new staple for the planting interest of this State—the article of cotton. Several here, as well as in Carolina, have followed me, and tried the experiment, and it is likely to answer our most sanguine expectations, samples of which I now beg leave to send, and request you will lay them before the Philadelphia Society for the encouraging of manufactures, that the quality may be inspected into. I shall raise about five thousand pounds in the seed, from about eight acres of land, and next year I intend to plant fifty or one hundred acres, if suitable encouragement is given.

"The principal difficulty that arises to us is, the clearing it from the seed, which I am told they do with great dexterity in Philadelphia, with *gins* or machines made for the purpose, &c.' He then requests his friend to purchase and send to him one of those machines, and adds, 'I have not the smallest doubt but that this State will be able to

furnish all that will be necessary for the manufactories in the Northern States"—and concludes with his conviction of its "magnitude to the manufacturing interests of America."

ART. XXXVIII.—*Horticultural Notices; by the EDITOR.*

(Continued.)

Were we to delay giving an account of new vegetables until we could ascertain positively how far they were suitable to our climate, and could give directions for their culture, years might pass on before we should be able to call the attention of our readers to them. Our object, therefore, in penning these notices is not to express any positive opinion either as to their merits or adaptation to our climate, nor do we pretend to give any directions for their culture. We will state merely what we have done, and how far success has attended our efforts, and we hope our readers will bear in mind that these are merely *experiments*, which may require to be varied, and that what may not be successfully cultivated one year, may be the next, owing either to the season being more propitious, or the experiment being varied. We will generally express an opinion, but these must be received with caution, as they will be founded (except when otherwise stated) on the experiment then detailed, and future ones may prove them erroneous.

Kohl Rabi.—This vegetable has long been known in some parts of Europe, and in old English publications we meet with prints of this plant under the name of the "Turnip Cabbage." In the "Complete Farmer," we find an account of an experiment made by Mr. John Wynn Baker, in 1763, and communicated to the Dublin Society. These experiments were instituted to test the "absolute and comparative advantages" of "Turnip Cabbages, Cabbages, Broccoli and Turnips"—as food for cattle and sheep. The experiment is detailed in full: we will, however, merely observe, that the turnip cabbages, produced at the rate of 57761 lbs.

per acre—averaging somewhat more than eight pounds each, after the root and stalks had been cut off. Some few weighed from fourteen to fifteen pounds. The common cabbage produced at the rate of 52038 lbs. Mr. Baker's opinion of their value was much in their favour—he observes, “one superior excellence in these plants is, that sheep will prefer them to turnips: another is, that they are firmer and more substantial food: and to ascertain their firmness in texture and quality in keeping after being drawn, I have kept them near twelve months exposed to the open air, to the extremes of heat and cold, and, after that, they were sound, save some few.” Much more is said in their favour and the London Society offered the next year premiums for their culture. This plant has not, however, answered the expectations then formed of it, and consequently has been abandoned—from what cause we know not: all late works are silent on the subject, and Loudon, in his *Encyclopædia of Agriculture*, passes it by with this remark: “The Kohl Rûbe or or Turnip Cabbage, has also been tried, but it is not fit to use in British cookery, and in respect to its properties in any other respect, it has not one to recommend it.”

We have thus laid before our readers what we have come across in our readings, both for and against this vegetable. We will *en passant* observe that it has lately been once more introduced into England from Germany, under the name of Kohl Rabi, and several varieties are advertised and recommended by the London seedsmen. In Germany we believe it is a favourite vegetable. We will now proceed to give what little information we are in possession of.

In February, 1832, we received from England, seeds of the purple, purple glass, and green glass Kohl Rabi; a part of each were sown on the 18th March. They came up on the 28th; and by the 30th of April were large enough to be transplanted, which was done with those thinned out. These were set in ground rather inclining to be moist, but well drained. The frequent alternations of drought and heavy falls of rain which we had during the last summer, did not appear to affect them, and they grew with considerable vigour. Those transplanted into low ground were decidedly the best plants, owing, we think, to their being less subjected to these extremes. By the 15th of June, they had bulbs three inches diameter, which by the 1st of July reached to four inches. They were then at their perfec-

tion, for by the last of the month, they were very strong in taste, and when cooked were rather lumpy.

In July, we had some more seeds sown, and on the 14th of September some were transplanted out. These did not succeed as well as those grown in the spring. It was with difficulty we got them to vegetate, (owing, perhaps, to our having none but old seeds,) but when up, they appeared to be fully as hardy as the turnip or cabbage. On the 5th of September, those which had not been transplanted were two inches and a half in diameter, which is fully large enough for use: those which had been set out did not attain this size until the 29th of October. During the whole of the winter these plants continued to flourish and increase in size, but none reached the size of those grown in the spring. Early in March, seed-stalks commenced shooting, and they are at this time (March 20) in full bloom.

Although this is called a cabbage, yet in nothing does it resemble one. From the ground arises a small stem, at the top of which are collected a number of leaves: at this place a protuberance commences, which gradually increases in size, whilst the first or under leaves drop, one after the other, leaving a bulb (which is the part eaten) with leaves growing from the upper part only. These (the bulbs) should be used whilst young, at which time they resemble in flavour that part of the cabbage-stalk which is *inclosed* in the head. In cultivating it, we pursued the same course which is adopted with cabbages, and this appeared to answer very well. Although our spring sowing produced the best plants, we are inclined to think it was more owing to fortuitous circumstances, rather than, that, that season is better suited to its growth. It is prized in Europe for its hardness and capability of resisting cold, consequently we suppose that the temperature of our fall and winter months would be more congenial to its habits, (as they are to the turnip and cabbage,) than the spring and summer.

A few of the spring crop were permitted to remain, in order to ascertain how long they would continue sound. In November, most of them had decayed, the inner part of the bulb entirely rotting away, whilst the plant apparently was in good health. Several which we examined on the first appearance of decay, we found had nothing left but a thin

rind, which was easily compressed together. A few, however, have continued good and are now seeding, but all are much injured by the severe frost which occurred on the night of the 15th inst.

Transparent Vienna—White Vienna—Transparent Glass Turnips.—We had all of the above under culture last season, but owing to the seeds being bad, we are unable to give much information relative to them. We could discover no difference between them. They appear to be only a small variety of the *kohl rabi*, which they strongly resemble in every respect, but are apparently more delicate, and perhaps better suited for the table. We expect again to try them, and our success or failure will be made known.* We would recommend to our friends to make a trial of this vegetable, treating it like cabbages or turnips intended for a winter supply. It will form a variety for the table, and perhaps be an acceptable one.

ART. XXXIX.—Query.

“Oak Hill, March 4, 1832.

Dear Sir,—I will be very glad to know from any planter, if he has ever tried compost manure in the cotton hole, and if so, how it answers. I am afraid my inquiry is too late for the season.

I remain yours, with respect,

A PLAIN MAN.

* Seeds can be had at Mr. Joseph Simmons, corner of Market and Church-streets. The *kohl rabi* is not to be had, we believe, in this place.

ART. XL.—Query.

“ Mill-Haven, March 10, 1832.

Sir,—Will you be kind enough to call on some of your correspondents for information relative to “ *Ricinis Communis*.” The species most approved of for oil, the mode of cultivation, the manner of harvesting the crop, separating the husk from the seed, the usual quantity of seed per acre, the quantity of oil per bushel, and whether any process of clarification is necessary with oil cold-pressed. A friend writing to me on the subject, referred me to the Franklin Journal or Mechanic’s Magazine, published in Philadelphia. You may possibly procure the work in your city, and the article may prove interesting to others as well as myself. I am erecting some machinery, which when completed, a press can be attached to with very little expense, and I have some idea of making an experiment both with that and the oil of cotton seed; should I deem my experiments worthy of a place in your journal, I will give them as some return, should you comply with my request.

I am, dear Sir, respectfully,

Your obedient servant,

AUG. SEABORN JONES.

The *Ricinis Communis*, (Castor Oil plant) grows quite common in the lower part of this State, but we know of no one who cultivates it at this time—no doubt there are many who either have or do now, and from these we hope to receive a reply to the request of Mr. Jones. We will examine all works in our possession, and should we find any thing of interest, we will publish it. In the third volume of this Journal, page 265, will be found an excellent article on the purification of the Castor Oil.

Ed. So. Agr.

PART II.

SELECTIONS.

ART. XXII.—On Planting.

[FROM THE LIBRARY OF USEFUL KNOWLEDGE.]

(Continued from page 145.)

Of the different modes of rearing forest-trees:—by sowing the seeds on the spot where they are to remain for timber. By sowing the seeds on nursery-beds, and afterwards transplanting the young trees to their timber sites. Modes of propagating, and of transplanting, preserving, and training proper shoots or suckers, produce by coppice roots or stools. Comparative advantages and disadvantages of the different modes; and of simple and mixed plantations.

Before the seeds of forest-trees are sown on the spots where the plants are to remain for the produce of timber, or the young trees are transplanted from nursery-beds to their timber sites, the land should be fenced and properly prepared for their reception. As fences, however, are constructed of various materials, turf, or earth, stones, wood, and thorns, or other armed shrubs, and the judicious adoption of the best kind of fence depending on local circumstances, this part of the subject, perhaps, may be more conveniently discussed under a separate head. It has been supposed, with good reason, but certainly without the evidence of such clear and undisputable facts as are absolutely necessary to bring full conviction to practical men, that when forest-trees are reared immediately from seed, and consequently whose tap-roots, proper-roots, and rootlets have never been disturbed or curtailed, they grow faster, attain to earlier maturity, and produce sounder timber, than such as are transplanted from nurseries. The facts brought forward respecting the structure and growth of trees confirm this opinion; but when useful or profitable planting is the object of the planter, it is necessary to inquire whether these apparent advantages are not lost for the most part, or entirely, in the extra. cost or expense which attends the execution of this method, in comparison to that of transplanting; or whether the extra. feet of timber that may be thus gained, will repay with profit the increased cost of produc-

tion. A detail of the different processes of these two first-mentioned modes of rearing forest-trees may assist materially in coming to a just conclusion on this important question. The oak being one of the most valuable of forest-trees, and its roots penetrating more directly, and to a greater depth in the sub-soil than those of any other tree approximating to it in value, it has been thought to suffer great injury by transplanting, and has, therefore, been chiefly insisted upon to be raised immediately from seed on its timber site.

Should the land on which it is intended to rear oak immediately from seed, be not in a clear state of tillage, it must be brought into that state by the most eligible means; these, of course, will depend on the nature of the soil and condition of its surface. If the soil to be sown is clayey and tenacious, retentive of moisture and covered with coarse plants, as sedges (*carix*), rushes (*juncus*), thistles (*carduus*), and turfy hair-grass (*aira cæspitosa*), the surface should be pared and burnt, the ashes carefully applied, and the soil ploughed as deep as the nature of the sub-soil will permit. It should have a clear-out summer fallow, with repetitions of cross ploughings and harrowings, as often as is necessary to bring the land to a friable and deep tilth. It should be ploughed to ridges twelve feet wide, sufficiently high to give an inclination from the crowns of the ridges on each hand to carry off all surface-water, and be well water-furrowed. A dressing should be applied of compost of dung, coal-ashes, road-scrapings, sand, &c., or any manure that can be procured, which may have a tendency to divide the texture of the tenacious soil, and make the tilth friable and deep. This part of the process will be found highly useful, and also necessary to insure a well-founded hope of success. An application of lime, when it can be procured at a reasonable cost, will also be found highly useful.

Should the effects of these operations have been powerful enough to bring the land to the essential condition of cleanliness, depth, and fineness of tilth required, the soil will be ready for the reception of the acorns in the spring. Unreclaimed lands, however, of this description, can seldom be prepared as above by the out-summer's fallow only; and in such cases it will be necessary to continue the process of fallowing for another season. A green-crop fallow may be now adopted; and should the weather be favourable, the crop will probably cover the expense of cleaning for that season, or at all events considerably lessen the cost of fallowing. The choice of the crop to be employed must be determined by the condition or adaptation of the soil to certain kinds of green crops, and the greater local demand that may be for one kind of produce more than another. The following may be pointed out: Swedish turnips, rape, potatoes, cabbages, and winter vetches. For these crops it may be unnecessary to

add, that the row and ridge system of culture should be adopted, as affording the greatest facilities for cleaning and pulverizing the land, either by the hand or horse-hoe, and thereby obtaining the great objects in view in their most perfect state, and at the least comparative cost. Green crops are here mentioned for fallow, because they exhaust the soil less than corn crops, and also afford the means of destroying every kind of weed much better; but if a corn crop should promise better advantages than a green crop, and secure the cleaning and pulverization of the soil, there can be no possible objection to it, the extra manure given with the corn crop supplying the loss supposed to be caused to the soil. As soon as the crop, of whatever kind, is reaped and carried, advantage should be taken of the first favourable weather to have the surface scarified, horse-hoed, or skim-coulter ploughed (according to circumstances of convenience, in the possession of one or the other of these implements), and the weeds collected by the harrow, and by the hand if necessary. It is, in this case, the safest mode to burn the weeds, for their seeds and the eggs of insects are thereby more certainly destroyed. The land should now be ploughed up to stand the winter's exposure. The mode of ploughing is of importance at all times, but more particularly so when the full effect of frost and winter weather is required to divide and ameliorate an adhesive, clayey soil. When the furrow-slice of a soil of this description is reversed, or laid quite flat, the weight and tenacity of the soil consolidate its surface almost immediately, and obstruct the action of the weather in breaking down the texture of the soil, as well as that of the harrows in raising the tilth, or the greatest mould for covering the seeds. But when the furrow slice is raised up so as to lie at about an angle of forty-five degrees, the greatest possible surface of the soil that ploughing can accomplish is exposed to the direct influence of the atmosphere in the most effective manner.* As soon as the weather will permit in February, the harrows should be used to raise as deep a tilth as possible; and when this mould is in its driest state, the last ploughing should be given: the reversing of this comparatively dry and ameliorated mould to the bottom of the staple of the soil is of great advantage to the growth of the plants. By the beginning of March, favourable weather will have occurred to use the harrows so as to obtain a proper depth of surface mould in which to sow the seeds; but it is essential that the greatest possible depth of mould be obtained, though the time of sowing be

* 'Hally's plough' is admirably constructed for this mode of ploughing.

It may be supposed that the preparation of the soil has here been too minutely dwelt upon; but being a part of the subject of considerable importance, in many instances too little attended to, and from the neglect of which failures of considerable extent have had their origin, as regards this mode of rearing oak-trees, we have ventured to state thus much on the point.

delayed until the middle of that month, but which should be avoided if possible.

There are two distinct varieties of the British oak, differing in the quality of the timber and quickness of growth. In collecting the acorns for sowing, therefore, it is of consequence to select those of the most valuable variety. The discriminating characters of these will be pointed out hereafter, when we enumerate all the different species and varieties of forest trees: here it will be sufficient to mention, that the most valuable variety of the oak is distinguished by having the acorns on footstalks (*Quercus Rubur pedunculata*,) and the less valuable variety by bearing the acorns without footstalks (*Quercus Rubur Sessiliflora*.) If it were possible to have the land in a fit state for sowing in autumn, as soon as the acorns were ripe, and the attacks of mice, birds, and insects upon them could be securely guarded against during the winter, the autumn would be doubtless the most favourable season for sowing; but as this can seldom be done, the acorns must be carefully preserved until spring, by spreading them out in a thin layer on a dry, cool floor. When placed in sand, unless the same be perfectly dry, the acorns are apt to vegetate; and the same thing happens when they are placed in heaps, or in two thick a layer.

The land being thus prepared for the reception of the seed, and the acorns ready, drills or furrows should be drawn with the hand-hoe two inches deep, and at intervals of four feet. In order that the rows of plants may not obstruct the surface-water from passing off by the declining sides of the ridges, a point of great importance in this kind of soil; the furrows for the seed should be at right angles to the ridges. The one-horse drill which, under other circumstances, would be the most economical mode of drawing the drills, is inconvenient here, on account of the curve of the ridges and the open drains in the furrows, over which the drills would have to pass.* The acorns should be dropped in the furrows at about two inches apart: this thick soing is to guard against the numberless casualties which thin them in the course of their vegetation in an exposed field or common, and also to allow the selection of the strongest seedlings to stand for timber—a part of the duty of the planter requiring great attention, and which hitherto has scarcely been attended to, or but incidentally. The acorns should be carefully covered with two inches depth of mould. The back of a large wood-rake will be found to fill up the drills effectually and with despatch. As soon as the young plants appear above ground, the soil should be hoed, and every appearance of weeds destroyed. Hand hoeing must be repeated as often as weeds appear, or the

* These drains are recommended to be made immediately after the ridges are formed, that the land may have the benefit of their free action a twelvemonth at least before the sowing of the seeds.

surface of the around becomes hardened, in fact the land must be kept in as clean a state, and as free from weeds, as the best managed seedling beds in a nursery garden, or disappointment and failure in a greater or less degree is certain to follow. The surface of a soil of this description, as regards the successful germination of seeds and growth of seedling plants, requires to be kept always in a friable, loose state; for if once it becomes hardened and cracks, the seedling plants will be injured, their leaves assume a pale sickly hue, and their growth will be greatly retarded. Where the plants are suffered to remain long in this state, the sap-vessels become contracted in the bark and leaves, and plants never regain that vigour of constitution which, in this stage of their growth, is so essential to their future perfection. The stem and branches remain stationary, until the roots, by the influence of a favourable season or two, sometimes force a new stem from the base of the stunted one, which in the course of one year overtops it, and becomes the stem or body of the tree; the original stem, taking the place of a secondary branch, soon disappears altogether. This is the invariable consequence when the growth of the plant, under these circumstances, is left to the unassisted efforts of nature—a fact upon which is founded the practice of cutting down to the surface of the ground stunted, young plants, in order to produce superior stems, which always succeed with the oak, chesnut, and ash, but never with coniferous trees of pine and fir.

During the summer of the second year, the plants which have escaped the attacks of the enemies before alluded to, will be strongly marked in the rows, and the horse-hoe may now, in consequence, be substituted for the hand-hoe: this will be found very beneficial as attaining the great objects of perfect weeding, pulverizing, and rendering friable and porous the surface of the soil at a diminished expense. The rows, however, will require to be looked over and hand-weeded with care.

Should the plants stand nearer to each other than one foot, they must be thinned out to that distance in the spring of the third year of their growth. In this process it is of the utmost importance that the smallest and least healthy looking plants should be taken out, and those left which indicate the possession of a vigorous constitution, without regard to the mere circumstance of exact distances. When a plant has a robust stem, clear bark, and a plump leading-bud, we may consider it as certain to produce a fine tree, or to contend with most success against natural defects of soil and climate, and accidental injuries. To protect young oaks against uncongenial climates, the best method is to plant nurse-trees of quick growth, and well adapted to the soil amongst them. An artificial climate is thus produced, and, to a certain extent also, the soil is ameliorated by the roots of these nurse-trees running near its surface,

while the oak has its roots obtaining nourishment from below ; the former, acting as drains, assist the growth of the oak, until its own roots and stem have acquired sufficient strength and dimensions to resist with effect the various unfavourable circumstances above alluded to. In soils suitable to oak this is not always necessary ; but deficiencies of soil and climate are generally remedied by the judicious planting of nurse-trees, of which we shall treat more particularly hereafter. The keeping down of the weeds, and the pulverizing of the soil by the hoe, being unweariedly attended to, the young trees will make rapid progress, and will require to be thinned out to four or five feet on an average in the rows, in the fifth year from sowing, when they will have reached that period at which the opposite and more general practice, that of transplanting from the seed-beds to the timber-sites, begins ; and as the subsequent culture, pruning and thinning, is the same in both instances, (to be treated of separately,) we shall proceed to consider the rearing of forest-trees by transplanting. No greater error exists in the planter's art than the doctrine that trees should be raised on the same quality of soil as that to which they are to be transplanted—as if robust, healthy plants were less likely to withstand its subsequent casualties of situation, soil, and local climate, than a weaker plant with contracted sap-vessels—the invariable consequence of a poor seed-bed soil. What is the intention of all the various processes of culture which have been just described as essentially necessary to the raising of oak from the acorn on a damp, cold, clayey soil, but to *enrich* the soil, and render the seedling plants vigorous and healthy ? and with how much less labour and expense can this be effected in a nursery-bed of clean, fresh soil, of whatever nature or texture, than on the extensive site of an intended plantation of forest-trees ?

Experience fully confirms that principle of vegetable physiology which teaches that robust, healthy plants, whether in the seedling stage of growth or of a larger size, succeed better than those of stunted growth, even when transplanted to the least favourable soil and exposure.*

* It is difficult to give a definition of what is termed *robust, healthy plants* so as to apply to every species of tree wherein the habits of growth vary in every individual species. The points of excellence cannot be estimated statistically, or by weight and measure, but comparatively. A number of minute discriminating characters, collectively, are readily distinguished by the eye, but when taken separately cannot be usefully described in words. A robust, healthy plant, not exceeding five years growth, may be said to have equally divided roots the principle ones of moderate length well furnished with secondary rootlets, and these with numerous fibres ; the stem straight, and possessing a girth or diameter proportionate to its length ; the bark clean, with an epidermis on the young wood exhibiting fissures, as if bursting or giving way to the increasing size of the parenchyma, particularly in the season of spring or autumn ; the buds full in size and not crowded ; the leaves perfectly shaped, and of the natural colour. The opposite of this

Where the land is to be planted with forest-trees is an extensive tract and remotely situated, and where the seeds of several kinds can be procured genuine, of good quality, and at a small cost, the formation of a private nursery may be advisable; but where the plants can be procured from a reasonable distance, it will be found the most economical and effective to purchase them from the nurseryman, and even in the former case one or two years' seedlings should be procured in place of seed, as a saving of time and expense. The following are essential points to be considered in establishing an effective nursery: fencing, shelter, aspect, soil, and management. The fence of a forest tree nursery requires to be *rabbit-proof*, or loss or disappointment are almost certain to follow. A foundation of brick-work should be made for a superstructure of close paling. Where shelter is not an object, a very cheap and excellent substitute is found in iron wire netting, which is manufactured for the general purposes of fences to young plants. *Shelter* is indispensable to the free growth of seedling plants, the injurious consequences resulting to which from sudden checks have already been mentioned, as also the bad effects of confining air to the health and prosperity of trees in every stage of growth; and therefore, at a same time that a full protection against cold, bleak winds and unfavourable aspects is necessary, a full and free circulation of atmospheric air must be secured, to allow of a well-grounded hope of success.

The soil of the nursery must be of an intermediate quality as to moisture and dryness, not less than eighteen inches deep to the subsoil, and under a south-east, or west exposure, or intermediate points of these. The varieties of soil required for particular kinds of trees will have to be supplied where the natural soil is deficient, as has already been specified when speaking of the seeds of trees.

(*To be continued.*)

state, from the effects of a poor or ungenial soil, exhibits all these characteristics in a diminished form and number; the opposite extreme or unhealthy state of plant, from the effects of overrichness of soil, may be supposed; for in our experience we have never met with an instance of the kind, to have all these parts of the structure in an enlarged excess.

ART. XXIII.—*Essay on Manures.*

Presented to the Cheshire (N. H.) Agricultural Society, in 1823, by LUKE HOWE, Esq. for which a premium was awarded by said Society.

[FROM THE GENESEE FARMER.]

(Concluded from page 48.)

In what *state of fermentation*, it is most profitable to put manure into the soil, or whether *any* be necessary in *farm-yard dung*, has of late been much discussed by scientific writers on agriculture. Sir Humphrey Davy has treated the subject with much observation and science. He confirms his theory by experiments of his own, and of the most enlightened agriculturists. He thinks the pure dung of cattle, &c. needs no fermentation previously to its application.

But as the dung of horses and cattle are united in the yard with "straw, offal, chaff, and various kinds of litter, a slight, incipient fermentation, is undoubtedly of use." But he says, "it is better that there should be no fermentation at all, before the manure is used, than that it should be carried too far." "During the violent fermentation necessary for reducing farm-yard manure to the state in which it is called *short muck*, not only a large quantity of fluid, but also a gaseous matter is lost, so much so that the dung is reduced two-thirds in weight; and the principle elastic matter disengaged is carbonic acid with some ammonia; and both of these, if retained by the moisture in the soil as has been stated, are capable of becoming an useful food to plants." By experiments he discovered that "soluble vegetable substances passed in an unchanged state into the roots of plants," and that fermentation was only necessary in the preparation of vegetable food to render fibrous substances soluble. The practice of our farmers is opposed to this theory. Their observations have been too limited in the use of green or unfermented dung. In making similar use of it as of the thoroughly fermented or *short muck*, the effects for the first year are in favour of the latter. For, if recent dung of cattle be put into the hill for Indian corn, its soluble and nutritious parts are too concentrated, and the mass too nearly impervious to nourish and extend the radical fibres of the plants. If this dung be mixed with straw, litter, &c. or horse dung, which is always imperfectly digested, the process of fermentation will generate too much heat for the tender fibres in some soils. But let the former or green dung be mixed with earthy matter, and be put into the hill for Indian corn, and the latter or coarse manure be spread and ploughed into the soil, for the same crop, and also in the hills for potatoes, it will then be discovered that the produce will be equally good the first year, and better prepared for future crops.

In the 'New-Hampshire Agricultural Repository,' it is stated, that "when green dung is laid upon the field and ploughed in, it is so dispersed, that it can ferment but little, if any. It is said of unfermented dung, that its good effects will be felt longer than those of fermented. This is probably true, for during the first year after green dung is laid upon the field it does but little more than to be prepared for actual use." The superior effects of green dung in the subsequent years being conceded, the question between us rests upon its effects the first year. But green dung "is prepared for actual use" the first year. How is this effected? By what other process than fermentation? It is well understood, that all that is necessary in this process is a due degree of heat, moisture, and oxygen (or atmospheric air). Neither of these is wanting when the manure is ploughed into the soil. For wherever these obtain in sufficient quantity to promote vegetation, decomposition will take place. The greater degree of heat in the manure heap, than in the manure in the soil, is generated by the process of fermentation, but this must begin without the agency of this *generated* heat, and when once commenced, the same cause will continue it, as well in the latter, however small the quantity, as in the former. The gradual manner in which this process will be carried on, will generate a slight degree of heat favourable to the germination of seeds, and will cause more of the elastic matter disengaged to be absorbed by the soil, affording a constant supply of food to the plants.

But let us resort to facts, for the effects of green dung during the first year. Farmers universally prefer such for potatoes. Wherever there is an unusual large crop of corn, we are generally told that a quantity of *green manure* was ploughed into the field before planting, and old manure was put into the hill. I observed in a field of Indian corn last year, a part of which was manured in the hill with green dung, and the other with old, a greater burthen in latter than in the former. This difference was undoubtedly owing to the causes before assigned. I have this year made a similar experiment. *One-half* the quantity of green dung was used as of old. Every other circumstance was equal. The former was with the hoe coarsely pulverized and mixed with earth. The corn planted on the green dung has appeared as well through the season as any other part of the field, the ears quite as well set and filled.

I have been informed by a farmer that he is in the practice of planting Indian corn on green dung, and that his crops are as good as his neighbours. He sleds his dung from his barn window late in the winter. The operation of the frost breaks up its texture, and by a little shovelling in the spring it is pretty well prepared for the hill. Besides the loss in quantity and quality of manure in keeping it a year longer than is necessary, the economical farmer will calculate his loss of interest on the

capital for that time. If the farm-yard is cleared of manure twice in a year, equal quantities of other materials may be carted into it as when cleared in the fall only. The manure, which the industrious farmer has collected in his yards during the summer months, will, in the fall, be carted to his fields and mixed, by alternately carting a few loads from each source to the same heap. This manure will be in the best order to put into the hill for Indian corn. In the spring a large quantity of unfermented manure may be taken from the same sources to be spread on the same field, and for potatoes in the hill. In this economical plan, more ground may be kept under tillage, with greater returns of English grain and hay, succeeding Indian corn, without additional manure.

The importance of the subject, I trust, will in some measure apologize for having said so much on the degree of fermentation required in the preparation of manure.

Compost, made by ploughing the sides of the roads, by decayed chips, &c. to which is sometimes added barn-yard dung, lime, or ashes, is most beneficially applied to top-dressing grass-land. In this preparation a material error is often observable. Green dung is spread on the surface of the bed or heap, and thus is lost the object of this application. Fermentation takes place slowly in the dung, but the heat and gases escape in the air, while the other materials remain nearly unaffected by the process. The dung should be incorporated with the other materials by ploughing, or laid up in alternate layers into heaps, the last layer being earth. In this way the process of decomposition, commencing in the dung, communicates itself to the other matters, and the products disengaged are absorbed or retained. Lime or ashes may be added, and perhaps as economically without dung. They are powerful agents in promoting putrefaction. Compost of this kind cannot be profitably made, except for top-dressing land, which cannot be ploughed without an injury to the soil; for most of these materials would be more serviceable in the barn and hog-yards, as before stated. Top-dressing is undoubtedly a wasteful way of applying manure. If the land be descending it is washed off; if not, much of it escapes by evaporation.

Wood ashes have been used to fertilize the earth so long as we have any account of husbandry. They contain charcoal and the vegetable alkali united to carbonic acid. These may again be reorganized into vegetable life. The alkali acts powerfully, in decomposing the woody fibres; and the gradual solution of charcoal increases their value as a permanent manure. They attract moisture from the atmosphere, which renders them particularly serviceable to dry soils. They are very beneficial to Indian corn, when applied to the hill, early in the season. But no grain receives so much benefit, from a dressing of ashes as wheat.

In top dressing of grass land, they are also useful. Seven years since I applied a few cart loads of leached ashes to that part of a meadow, which bore little else than stunted hardstacks, cranberry and moss. The first year, clover and herds grass made their appearance. Since which time, it has produced a very good crop of these, red top, and meadow grasses. I have annually applied to different parts of the same meadow, either road manure, barn yard dung, or plaster. They have all been evidently useful; but the ashes the most so. Leached ashes are undoubtedly more beneficial than the unleached, according to their merchantable prices. Probably owing to their containing more charcoal, and possessing more body, their capacity for the absorption of moisture is greater. The opinion, that ashes exhaust the soil by their *forcing* properties, in the sense as generally received, is correct. It is true, they call into use some of its dormant qualities, which must in time be expended, and the soil less productive, unless some proportion of its products is restored in the state of manure. But if they *force* the soil to do its office, they furnish from themselves, and the atmosphere, a considerable share of vegetable food. Instances could be mentioned of the perceptible good effects of ashes, on ploughing eighteen or twenty years after their application. The paring and burning of loose vegetable mould, produce their favourable effects principally by the combustion of parts of its inert materials; and thus affording ashes and charcoal, which have a tendency to decompose the remainder.

Lime is a useful manure. When applied to soils, like ashes, promotes the decomposition and putrefaction of vegetable matter. "By this kind operation," says Sir H. Davy, "lime renders matter, which was before comparatively inert, nutritious; and as charcoal and oxygen abound in all vegetable matters, it becomes at the same time, converted into carbonate of lime."

Lime should not be applied with animal manures, unless they are too rich, and for the purpose of preventing noxious effluvia. It is injurious, when mixed with any common dung, and tends to render the extractive matter insoluble. It is evident from its operation that the lime should be applied sparingly to light and naturally weak soils; but strong heavy loams containing much inert matter, will bear larger quantities, with more durable effects. It is a pretty well established fact, that worn out lands cannot be restored by the use of lime. It is obvious then, that it should not be repeated till the soil be furnished with vegetable matter requiring its soluble powers. This should seem to favour the opinion, that lime is incapable of being converted into vegetable food. But, by its action on vegetable matter in extracting its carbon and oxygen, it may in part form a soluble compound, capable of being absorbed by, and forming a constituent of plants. It is said in the *Edinburgh Encyclopædia*, that, "it is the far-

mer, only, who can judge of the quantity (of lime) to be given, but as a general principle, it is safer to exceed the proper quantity, than to be below it. In the latter case, the application may prove useless, and the whole expense lost; whereas, it rarely happens that injury is sustained from an excess, especially if more or less dung is soon added."

If a compost bed is made of materials difficult to dissolve or purify, as tanner's spent bark, saw dust, shavings, &c. no other article could be so carefully added as quick lime.

Gypsum is much used, and is annually growing into higher estimation in this country. Its *modus operandi* on vegetation remains yet an unsettled question. By one writer, Kirwan, it is said that "the *rationale* of its effects may be deduced from its extraordinary septic powers; for it is found to accelerate putrefaction in a higher degree than any other substance, and that it is no inconsiderable part of the food of many plants." Sir H. Davy from experiments made by himself, has formed an opinion that it possesses no putrefactive powers, but that its effects result solely from its entering into the composition of plants, and "the reason why gypsum is not generally efficacious, is probably because most cultivated soils contain it, in sufficient quantities for the use of grasses." This he thinks may be furnished the soil in the manure; and is not taken up in the crops of corn, peas, and beans, but is consumed by the growth of grass and hay.

I have in the course of this month tried several experiments, with the impression their results would correspond with those of the valuable author last mentioned; but I have been disappointed. I united ten grains of each of the following articles—plaster, ashes, slacked lime, and salt, separately, with as many pieces of mutton, of two hundred grains each, and placed another piece of meat in the same situation. Decomposition was first discoverable in that with plaster, and ashes, and during the several days they were observed, they retained equal moisture and weight; whereas, that with lime, and the one to which nothing was added, lost weight by the more rapid evaporation of their moisture. I have made similar experiments by mixing one drachm of beef intimately with one grain, also with half a grain of each of the above-named articles, lime excepted, and the results were similar to the above. These experiments were witnessed by gentlemen, who agreed with me in the results stated; and were they not contradictory to so good authority, I should deem them satisfactory. At present I do not consider them decisive, but should future experiments confirm these results, the operation of plaster might *first* be deduced from the power of absorption of moisture which it imparts to the soil; *secondly*, from its septic powers on animal and vegetable substances; *thirdly*, itself affording a valuable nutriment to plants.

It is perhaps, only from such a combination of causes, that we can infer its remarkable effects on vegetation. It is said it operates equally well on exhausted soils. Is this the fact, where there is no latent principle to be excited into action? This, perhaps, may admit of a doubt. But if correct, could it not be accounted for, by the radicles of plants being supplied with more moisture, and their own absorbent powers increased by the operation of the plaster?

As experiments of a frequent application of small quantities of plaster are not attended with much expense, they will best direct the farmer in its use. It may be important, however, to observe that the nature of its supposed operation requires that it should be placed near the surface of the soil; and that it should be applied before the spring rains are over, or no benefit will be received from it the first year, as a solution of the plaster is necessary, and five hundred times its weight of water are required to effect it. It is used in the quantities of three to eight bushels an acre. Small quantities repeated are said to be better than the same amount applied at once.

Salt is an article which has not been much used as a manure in this state, and probably will not be. If it be a useful food to plants, it is too expensive to be extensively applied. Sir John Pringle has said that in small quantities it possesses sceptic powers. If so, the quantity must be extremely small, as in my experiments above-mentioned, one-half of a grain of salt was sufficient to retard decomposition in one hundred grains of meat. It is an absorbent of moisture, and all vegetable manures are improved by being impregnated with it. The farmer may therefore take this into account, in the use of it, to preserve his hay, and benefit his cattle.

In the application of manure, the farmer will first determine the specific qualities which his different fields require. If the soil of either be cold and heavy, he will carry to this his coarse and warm manure, such as horse dung, and that which contains the most straw, or unfermented matter: on the contrary, if sandy or gravelly and dry, he will reserve for this his hog-manure, and such as is most fermented; but if his land is uniformly moist and warm, he will mix the several kinds of manure before the application, as has been before directed. It is of no small consequence, that when manure is put into the hill or spread on the field, to be covered without delay, that the soil may retain its moisture and nutritious gases.

ART. XXIV.—*Improvement of Worn Out Lands.*

[FROM THE AMERICAN FARMER.]

[We have omitted the introductory part of this Essay.]

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The principal modes of improving worn out land, where only the ordinary facilities are at hand, are these :—inclosing, ploughing or harrowing, when necessary ; manuring, intermixing soils, turning in green crops ; or on light lands letting them fall on the ground, treading them down. Extraordinary facilities, such as large bodies of vegetable manure or alluvial soil may be employed to so much advantage, that a sure and certain calculation may be made of the result ; but long habits of killing land seldom permit such opportunities to be properly improved. We thus see that the restoration of worn out land involves considerations, and the use of materials to be drawn from every department in husbandry. Rest, which affords an opportunity to discover the propensities of land, be it ever so poor, is essential to its improvement, is the introductory process of reformation, the necessary index to subsequent operations. Good fences then, are required to insure the success of the inclosing system—the season, soil, and circumstances, must then determine what implements should be used to get in a liberal portion of grass seed well mixed, if it has not been previously ascertained that certain grasses are best adapted to the soil—an application of one-fourth or one-half bushel of gypsum should then be spread per acre ; in due time the capacities, or deficiencies of the ground being discovered, proceed in the use of the plough, &c. In preparing that portion of the field which has not taken with grass for a crop of small grain, to be sowed very thin, with the usual allowance of grass seed, harrowed in with the grain ; to insure the success of the grain and grass crop, this land, must be manured with well pulverised manure on the rough ploughing and harrowed in ; any other mode of applying manure to dead poor land would be a complete sacrifice of the manure, and a subsequent loss of the crop—that is to say, is the manure is not applied in a well rotted fine state, in a careful and regular manner to the surface of the soil, and well mixed with the harrow, in the earth where the seed will derive an immediate benefit, the experiment would fail ; for it must be evident that the same manure spread on the earth and turned under, would be lost in its effects on the crop to be sowed, and to the immediate and future improvement of the land—this course under such circumstances does not in the least clash with the propriety of spreading our half rotten barn-yard manure in the spring on our better lands before ploughing, and turning it in to prevent as much as possible evaporation ; undergoing its full decomposition

for the benefit of a corn crop. I think we shall shortly prove, however irregular and unpolished may be the mode, that any outcasts from other professions will not be likely to succeed as farmers—they too generally, help on the work of destruction; seldom renovate by intelligence and industry, as they might have done; if the incurable vanity and unfortunate misconception of their parents, with the interested acquiescence of teachers, had not forced them against wind and tide, and capacity and inclination too, to pursue the phantom of greatness in political life, through the loss of many valuable years in the study of languages and professions never to be prosecuted. This is another of the fertile sources of the poverty of our lands—none will doubt it who have read, travelled, or conversed with mankind. Indeed, the most ignorant clodhopper will tell you by his unavoidable experience and observation, that such men rarely succeed in improving land. Shall we then heedlessly go on, ignorantly, to destroy more and more as we advance upon our noble forests and rich hills and vales, or rather, by a rational change, retrace our steps and apply our talents and strength to the recovery of our worn out lands. Establish then institutions of learning on the basis of agriculture. If it is necessary to your convictions, prejudices, or inclinations, incorporate the study of the languages, with that substantial system of education which may indeed be perfected in one. That salutary system which will best suit a nation of republicans, making the study of the scriptures as they are in plain English,* the foundation for our morals and religion—the book of nature, and the history of man explored and unravelled by science in the unquestioned demonstrations of mathematics, by the chemist and philosopher—and the records of the historian.

(To be continued.)

* This recommendation is not intended in the least to interfere with the promotion of institutions for ancient literature, which it would be as presumptuous to undervalue as derogatory to the taste of a friend of literature, which, perhaps is further to be explored, through the study of ancient tongues—but simply to express an opinion that nine out of ten, perhaps ninety-nine out of a hundred, will do better to comprehend well in a single languages.

ART. XXV.—*On the Mulberry-tree, Silk-worms, &c.*

Translated from the French for the 'Genesee Farmer,' from a work entitled 'The Practical Course of Agriculture.'

Although most caterpillars are very troublesome and destructive, one of the species is of inestimable value; it is the silk-worm: the matter produced by this insect, in the hands of industrious workmen, furnishes, both for use and luxury, the finest and most beautiful stuffs; and which has become one of the most important branches of commerce. Therefore every one who has leaves of the white mulberry in his possession, and does not profit by them, attends not to his own interest, because he might derive from them great profit, without any expense, or the consumption of much time.

The White Mulberry.—The white mulberry, originally from India, produces the leaves most proper for nourishing the bom-bix in order to obtain fine silk: this tree is generally robust, grows quickly, multiplies easily, and acclimates itself in every country: in hot countries its height and proportions are equal to those of the oak. The various properties of its bark and its fruit are sufficient to assign it a very distinguished rank in the vegetable kingdom; but that which makes it of inestimable value, is that precious material which it furnishes the fair sex, both for dress and ornament: incomparable material! which presents to the eye a lustre not less resplendent, and to the touch a surface not less soft and polished than the charms which it enrobes.

Nevertheless, the mulberry has not been created expressly for the luxury of man: its fruit and its leaves belong equally to all insects. The mulberry was of no avail to human industry, before the discovery of the precious material of which we are about to speak. The quality of silk depends neither upon the worm which spins it, or the seed from which it springs. We see that the seed of the middle countries of Europe produce fine silk; while in the country from which they originated the silks they yield are coarse and heavy. The quality of the silk depends principally on that of the leaves with which the insect is fed. The mulberry, speaking figuratively, is only a mine which the worm works; and this mine is in itself neither more or less proper for furnishing the fine matter than according to the soil which it occupies and the climate in which it is placed.

What proves that nature has not destined the mulberry to the sole use that we make of it, is, that in order to obtain a fine silk from this tree, it must be taken from the soil and climate which it likes best, and transported to those where its vegetation is less vigorous; its trunk less thick and high; its leaves not so coarse and large; the tree altogether less majestic; and by a contra-

riety still more singular, the worm which it should feed in these strange countries would infallibly perish were it not supplied by an artificial heat equal to that of the climate where it breeds spontaneously.

Throughout a great part of Asia, in the southernmost provinces of China, and, above all, in Bengal the silkworm requires no care; it lives on the trees where they breed, grow, and pass through all their metamorphoses. The inhabitants of these countries have merely the trouble of gathering the cocoons; missing a sufficient to renew the seed.

But on examining these silks, it is remarked that those of China have no other merit than their dazzling whiteness, which is owing, perhaps, to a manipulation, or to some ingredients which are to us unknown. As to evenness, fineness, and lightness, these silks, like those of the rest of Asia, and chiefly those of Bengal, are so inferior to the silks of the Levant, Spain, France, Piedmont, Palatinate, &c. and this inferiority can be attributed only to their soil and climate, although otherwise they appear so favourable to the production of the worm and the growth of the tree which nourishes it. Therefore it is natural that without regarding the soil which the white mulberry likes best, we assign it that best suited to produce the rich material which we wish to obtain from it. The fine quality of the silk therefore, depends on the choice of soil and climate.

A rich and fertile soil gives to the mulberry a quick and vigorous growth, and a leaf, which by being too substantial, produces but a coarse, heavy, and inferior silk.

Wet and marshy lands, those which are situated in valleys or near rivers and streams, give to plants such an abundance of sap that they become in a short time very fine trees; but the leaf being too watery enervates the worms, occasions them many diseases, retards the *noontee*, (that is, the period when the worms spin their cocoons,) of those who do not perish, and produces only a silk flimsy, and of little value.

The leaves of those mulberry trees which grow in elevated, dry, sandy or gravelly soils, are the most valuable; the crop is not so abundant, but the quality fully makes up for the want of quantity. It has been demonstrated by experience from exact investigations on this subject, that the worse a land is reputed to be, so much the finer, lighter and stronger is the silk which it produces, three qualities which constitute the goodness of this material. The quantity of silk, depending only on the leaf which feeds the insect, it should be fine, light, and not substantial; therefore, the poorer and less fertile the soil, so much more does it possess the qualities. No culture in this respect, even, offers the same advantages as the mulberry.

This tree takes root in ground which we suppose to have the least productive virtue; without being impeded by any obstacle,

it spreads its roots indifferently both near the surface and deep under the ground, when it does not obtain the majestic height of the oak, it contents itself to vegetate as an humble shrub. The white mulberry can be trained to any shape which fancy can invent: as a copse, an espalier, a standard tree, or a bush, its leaves will always possess the same property: it is true that in a barren soil they produce but very few, but the less they are of them, so much the more precious they are from the value they add to the material which results from their use; thus gaining in quality what is lost in quantity: we owe it, every other consideration apart, to prefer a bad soil, for in that only it produces the finest silk.

It is to be noted that all land proper for the cultivation of the wheat, is improper for the mulberry, relative to the qualities contained in its leaf. On the contrary, this tree acquires all the necessary qualities from land favourable to the growth of the vine or rye.

An essential rule to be observed in planting these trees, is to dispose them in such a manner that when they have attained their full growth their branches may never touch one another; for then the mulberries would injure one another, either in being too crowded or in intercepting the air which should circulate freely around them. But a rich soil giving them height, and considerable development, they should be placed at a proportionate distance.

There exists a remarkable analogy between the vine and the mulberry; this tree in order to produce fine silk, as also the vine to produce good wine, rejects every sort of dung. The mulberry grows equally as well on hills, with a southern or eastern aspect: but it has moreover an advantage over the vine, in being able to flourish on the plain and in better resisting the north winds. From these considerations its culture should be preferred above every other on a flat, dry soil, where it is impossible, or very expensive, to procure barn-yard manure.

An almost general prejudice against the white mulberry destined for the nourishment of the silk-worm, is, that those which are grafted are much better than the wild, that is to say, those which spring simply from seed, shoots or suckers. The only advantage of grafted mulberries, is, that they furnish a larger and fuller leaf; but it is certain that the leaf of the seedling, when well cultivated in a proper soil, produces much better milk, in far greater quantity, and that the worm which is fed on it thrives better.

ART. XXVI.—*On the Planting of Cotton, and the best means of avoiding the ravages of the Cut-Worm.*

[FROM THE AMERICAN FARMER.]

"La Grange, January, 1832.

Mr. Smith,—The listless apathy of planters generally, has often been the subject of my reflections; while our less enterprising but more prudent brethren of the north and east, deem no expenditure of money or mind, devoted to agricultural purposes, wasted or misapplied; we of the south, folding our arms in supine indifference, dream away the precious moments, while our lands are rapidly deteriorating, and our crops annually lessening, without an effort to retrieve the one, or improve the other; who better merits the title of blessed, than he who devises fertile and beautiful lands, his own worthless and exhausted inheritance. I know no consideration which would so soon induce me to yield my political tenets, and become a *national republican*, no arbitrary assumption of power by perversion of the federal constitution, which I would sooner sanction, than that law which should make it obligatory upon those, by whose wretched systems fertile lands were exhausted and rendered worthless, to cultivate them the remainder of their lives. Wretched inexplicable infatuation; if patriotism, if philanthropy know no place in our bosoms, let selfish principles, at least, prevail, let the welfare of our families and offspring point out to us the necessity of a different course. Of that system which tends at once to the improvement of our lands and our crops, how much have we to learn, of the means of even partially obviating the many accidents, and sometimes entire failures to which cotton growers are subject; how little do we know, how seldom have we an essay, or even a suggestion, for lessening the ravages of the cut-worm, the rot, and the rust, or a treatise on even the rudiments of planting, either too indolent or too careless to turn our attention to these vitally important subjects, or deeming every one equally well informed as ourselves, or lost in unavailing complaints relative to a tariff, an evil of itself, God knows, of sufficient magnitude, without the many debits by which we unjustly swell the account. Residing myself, in a section of the south-west, noted for absence of discipline, and every thing like a regular and judicious agricultural system, where each man, as is natural among such men, adheres more pertinaciously to his own opinion than to his coat during the prevalence of a bleak north-wester, I seek abroad that information, which is inaccessible at home, and crave a division of those fruits which may be garnered up by minds more discriminating and experienced than my own. Through the medium of your useful paper, I would gladly exchange the little knowledge I possess, for the treasures of

better disciplined minds; I write, not to impart, but to illicit information, information which practical men have *tested by practice*. Of the origin and means of destroying the cut-worm, by which we were, the past season, more grievously taxed, than by all the tariffs or imposts ever levied by the federal government, know we nothing? On the rust and the rot, what treaties have we? or have we any system applicable in the main, to the cultivation of the cotton crop, or any means of learning the soil and locality to which this general system may be inapplicable, as always happens, under the same latitude, and sometimes within the limits of the same plantation.

There is one fact upon which, I think, cotton growers are agreed, yet we find it difficult to act, even upon this, with any thing like concert, that is, that it would greatly conduce to our pecuniary interests and general comfort and independence, eventually, if less time and labour was devoted to raising cotton and more to other crops; in this way we might lessen our *present* incomes, but at the same time we greatly lessen our expenditures, and with a little management, for a little while, our incomes might be increased without an increase of expenditure, though so long as cotton is raised to even half its present extent, it will remain an object of primary importance among us.

In preparing for this crop, my lands are first laid off in beds four feet apart, (this appearing to be the proper distance on average uplands,) and three furrows thrown together, and just preceding planting, two others are added, which, when the bed is split with a small *bull tongue* or *gopher*, leaves the whole fresh broke and free from germinating grass seeds, which are apt, when putting up at the same time or before the young cotton, to smother the tender plant, and give it a *backset*, from which it rarely recovers; my seed are then sown as they are taken from the pens, without the tedious process of rubbing, adopted by many, and which I conceive, entirely useless; they are then covered with a wooden harrow, from which the middle fore-tooth has been taken, or never inserted, with a heavy roller attached to the hinder part to break the clods and compress the earth about the seeds, which insures earlier vegetation, and hardier plants, and the surface of the beds are less subject to bake. I should now prefer breaking the balk, lest it become hard, and be attended hereafter with difficulty in breaking it *deeply* and *effectually*. The young cotton should be immediately gone over with the hoes, and as soon as admissible, thinning commenced, not with the fingers, a painful and tedious process, but by striking the hoe carelessly through the drill, leaving in a place two or three stalks, the most unpromising of which are afterwards to be taken out, and now follow the plough, striking a furrow on each side the cotton, with the bar to the drill, throwing up a list on the balk or middle, thus (if the ploughs turn well) smother-

ing the young grass, and leaving the cotton in a situation, again to be gone over with the hoes, with more facility and despatch. The board should now be turned to the cotton, and the first furrow filled, or thrown back, and then the balk broke a second time, *deeply and thoroughly*. The ploughs are no more required, but skimmers, if needed, running lightly, to avoid breaking and wounding the roots, which impedes the growth of the cotton, and lessens its product.

All lands, in producing the same crop several years in succession, have a tendency to tire, therefore to insure good *stands* and vigorous plants, no land should be continued in cotton longer than two or three successive years at most, nor do I know of any better means than this, of avoiding the ravages of the cut-worm; special care and attention should be given, in the first instance, to lay off the rows to the best advantage, and afterwards they may be easily annually reversed, four feet being a good distance for corn as well as cotton.

In all agricultural operations, a special eye should ever be had to the preservation of the soil, as well as to the greatest possible product from the least labour, and nothing conduces more to either object, than *deep close ploughing seldom repeated*. The product of my corn crop the past year, with one good ploughing, after balk breaking, was eight or nine barrels per acre, while an adjoining field with six ploughings, produced only six barrels, and while, in addition, a heavy crop of peas, smothering the weeds and fertilizing my lands, fed and fattened my pork, my neighbour's field was overrun with grass and noxious weeds. I have been in the habit of laying my rows off horizontally, not with a level, but by the eye, which answers equally well, when done by a skillful ploughman, and if any defect may be discovered, the rows can be little altered the second year, though I would recommend that very broken lands be principally cultivated in small grain. I have ever avoided in preparing my lands for a crop, that wretched system of gleaning closely and committing all to the flames, nor have I ever found any inconvenience originating therefrom; on the contrary, my lands were evidently fertilized and pulverized by the decomposition of this matter; I suffer nothing to be taken off, which will not obstruct a strong plough drawn by a strong mule, (evidently and decidedly far the best animals which can be employed on a southern plantation,) unless indeed, it be taken to the farm yard, to be returned with interest. Let me again insist, that nothing so much conduces to preserve our lands, facilitate our labours, and increase the products of each, as *strong and well fed teams*, and *good ploughs*, and these placed in the hands of able skillful ploughmen, properly superintended.

ARATOR.

ART. XXVII.—*Management of the Dairy.*

[FROM THE LIBRARY OF USEFUL KNOWLEDGE]

[In a description of the Gloucestershire Vale Farm—England.]

It is acknowledged by every one, at all acquainted with the subject, that the quality of cheese does not depend upon the superior richness of the soil or the fineness of the herbage; for cheese of the first quality is frequently made from land of an inferior description, and from herbage of a coarse nature. Nor does the quality of the cheese depend upon the breed of the cows, for cheese of the best quality is made from the milk of cows of all the different breeds that are to be found in the country; we think it principally depends on the management of the cows as to their food, &c., of the milk in converting it into cheese, and of the cheese, till it is fit for market.

The following circumstances are injurious to the quality of cheese; allowing the cows to get rank or ill-flavoured grass or hay, these conveying a bad flavour to the milk and cheese; allowing the cows to run and heat themselves; driving them far to be milked, which makes the milk froth much in milking; carrying the milk from the place of milking to the dairy; and allowing it to remain long after it is milked, before it is set with the rennet.

The greatest dependence is upon the dairy-maid; and the chief art of making cheese of the finest quality lies in her management. The superintendence of the dairy invariably devolves upon the farmer's wife. Mrs. Hayward attends to every minute circumstance in this department, and the following is a report of the information she has obligingly communicated to us respecting the whole economy of the dairy of this farm.

The management of a dairy should be conducted with the greatest regularity. Every operation should be performed precisely at the proper time. Either hastening or delaying the execution of it will cause cheese of an inferior quality to be made of milk from which the best may be obtained. A dairy-maid is selected for skill, cleanliness, and strict attention to her business. Her work commences at four o'clock in the morning, and continues without intermission till bed-time.

Dairy-house.—The dairy-house should be kept at a temperature of between 50° and 60°; and the dryer it is kept the better, as both milk and cream retain their sweetness much longer in dry than in damp air. Every time, therefore, the dairy is washed, it is dried as quickly as possible.

Around two sides of the dairy there are broad shelves, made of elm, for putting the vessels that hold the milk and cream, and the newly made cheese upon. On another side there is a frame with three large stone cheese-presses. In the middle of the north

side is the door: and in corner, on the left, is the stair leading up to the cheese-lofts; and behind the door is a single cheese-press, which is generally used in pressing the cheese the first time, before it is cut down and put through the mill. In the middle of the floor stand three leaden vessels, large enough to hold all the whey of one "meal" or milking; and by the side of these stands the cheese-tub.

Above the dairy there was two cheese-lofts, around the sides of which there are broad shelves for holding cheeses; and in the middle stands a frame for holding two rows of boards, called here "cheese-tack," which being only about eight inches apart, contain a much greater quantity of cheese than could be disposed on the floor. The stair to the cheese-lofts is of oak, and seems to be the pride of the dairy-maid, for it is dry rubbed and polished so smooth that it is dangerous to walk upon; but this sort of pride is encouraged as evincing an attention to cleanliness.

Along the north side of the dairy there is a shed, which communicates with the dwelling-house. In this shed the utensils are kept upon a stand for the purpose, the cream is churned, and other work performed, nothing being done in the dairy, but the making of the cheese and the making up of the butter.

Opposite to the door of the dairy and detached from the shed, is a wash-house with a pump-well, at the door of it. In this wash-house, the water and the milk are heated in boilers for the purpose; and all cleaning work is performed.

Utensils.—The milking-pails are made of maple, on account of the lightness of the wood and its cleanliness of appearance. They hold about six gallons each, and the cheese-tub is of a size large enough to hold the whole of the milk. The ladder, the skimming-dish, and the bowl are of maple. The sieve for straining the milk is about fifteen inches in diameter, and has a hair-cloth bottom.

There are a number of cheese-vats, sufficient to hold all the cheese made in four or five days. They are made of elm, and turned out of the solid. That which gives five cheeses to a cwt. is considered the best size for double Gloucester, the inside diameter of which is fifteen inches and a half, and depth, four and a quarter; and that is considered the best single Gloucester, which gives eight to a cwt. the diameter within being fifteen inches and a half, and depth, two and a half. Round boards, called "suity boards," made of elm, of the diameter of the cheese-vats, and thicker in the middle than at the edges, are occasionally necessary to place on the cheeses, when in the press, if the vats are not quite full. Without the assistance of these boards, the cheeses will be round in the edges, (a proof of not being well pressed,) and not so handsome.

The cheese-presses are made of stone, as being the cleanest material for the purpose, and the steadiest pressure. They weigh about seven cwt. each; they are raised by a block and tackle; and the whole apparatus is painted white.

From the whey leads, which are oblong and about eight inches deep, there are leaden pipes which convey the whey into an under-ground cistern, near the pigs' houses, where by means of a pump it is raised, when wanted, for the pigs. Leaden keep the whey longer sweet than wooden vessels, and are much easier kept clean. This is done by scouring them with ashes of wood, and washing them well every time they are emptied, which is every thirty-six hours.

Tin vessels are used in preference to earthenware for holding the milk that is set for cream, and also for holding the cream. Those used for the cream hold about four gallons each, and are made with a lip for the convenience of shifting the cream from one of these vessels into another. This is done once every day during the summer; and there is a wooden slice or knife always kept in the cream vessel, with which the cream is frequently stirred during the day, to prevent a skin from forming on the top of it, which is injurious to the quality of the butter. The skimming-dish, used for taking the cream off the milk, differs from that used in cheese-making, being made of tin, with holes in it, to let the milk run out that may be taken up with the cream.

The butter scales, prints, and butter-boards are of maple. The boards for making up the butter in half-pound rolls are about one foot long and nine inches wide. The barrel churn is made of the best oak, and great attention is paid to its cleanliness. The butter-milk is never allowed to remain in it; but it is washed, scalded, and put up to dry, as soon as the butter is taken out.

Milking.—This is performed in three separate courts, to which the cows come from their several fields. The milkings should be as near as possible at equal divisions of the day, commencing at about four o'clock in the morning and three in the afternoon. To each milker eight cows are assigned, and one man carries the milk from all the milkers to the dairy. The milking should be finished in an hour. The dairy-maid sees that the milkers do their duty, and that all the cows are milked clean; for the milk that comes last is the richest; and, besides, if the cows are not clean milked, there will be a gradual diminution of the milk, perceptible daily: for these reasons the greatest care is taken that the cows are clean milked.

Cheese-Making.—The cheese-tub being put in its place in the dairy, the ladder is put across it, and a large thin canvass cloth covers the whole tub and ladder to catch any of the milk that may drop from the pail, and to prevent dirt from falling into the tub. Above this and upon the ladder is placed the sieve, through

which the milk is strained. If the milk should not be of the temperature of 85° , a portion of it is put into a deep tin, kept for the purpose, and placed in a furnace of hot water in the wash-house, by which means the whole is warmed to a proper degree. It is of the utmost moment to attend to this; for if the milk is not warm enough when the rennet is put into it, the cheese will be "tender," and will bulge out in the edge, which spoils the appearance, and a great quantity of sediment of small curd will be found in the whey leads, which is so much curd lost. If, on the other hand, the milk is too warm, it will cause the cheese to "heave" or foment, which injures both its appearance and quality.

When the milk is sufficiently warm, the colouring and the rennet are put into it. The colouring or anatto is put in by rubbing a cake of it on a plate amongst the milk until, from its appearance, it seems coloured enough. One pound of anatto, at five shillings, is sufficient for half a ton of cheese.

The rennet being added immediately after the anatto is put in, the tub is covered with a woollen cloth for, at least, an hour. Rennet or runnet is made from the stomachs of calves, called here "vells." Irish vells are the best: they are cured and sent to England, and sold by the grocers to the dairy-farmers. Mrs. Hayward never uses them till they are twelve months old, for, if they are not old, the rennet made from them causes the cheese to "heave," and to become full of "eyes" or holes. She prepares the rennet from them by adding to every six vells two gallons of brine and two lemons. The lemons do away with any disagreeable smell, and give the rennet sweetness and agreeable flavour. Twenty or thirty gallons of it are made at a time, as it is found to be much better, when made in large quantities. It should never be used, till it has stood for, at least, two months.

When the curd is sufficiently firm for breaking, it is gently and slowly cut with a three-bladed knife, down to the bottom of the tub, (the knife being about fourteen inches long,) both ways or at right angles, and around the sides of the tub. The cuts should be about an inch apart. When it has stood five or ten minutes to allow it to sink a little, and the whey to come out as clear as possible, some of the whey is dipped out of it with the bowl, and the curd is cut a second time with the three-bladed knife—very slowly to begin with; for, if the cutting is done hurriedly, a great sediment of very small curd will pass through the sieve and be found in the whey leads, and there will also be an increase of the quantity of whey-butter which should have been in the cheese, and the value of the butter, thus obtained, will not compensate for the waste of curd, and for the loss of credit which the cheese will sustain from the abstraction of butter from it. The cutting being, therefore, performed very slowly at first, and with the strokes of the knife at a considerable distance from each other,

is gradually quickened, and the strokes are taken nearer and nearer every time. At last, one hand, with the skimming dish, keeps the whole in motion, turning up the lumps suspended in the whey, while other, with the knife, is in constant motion, cutting them as small as possible—and this operation is continued till no more lumps are brought to the surface, and the whole mass is reduced to one degree of fineness. This process may occupy a quarter of an hour.

The curd is now allowed to stand a quarter of an hour, and being, thus, sufficiently settled, the whey is taken from it with the bowl, and poured through a very fine hair sieve, placed over the whey leads. When the greatest part of the whey has been separated from it, the dairy-maid, folding over a portion of it, and beginning at one corner, goes around the tub, cutting the curd into lumps, and laying them on the principal mass, by which operation the mass is carried all around the tub, and most of the remaining whey escapes between the cut fragments, as they lie and press upon each other. From time to time the whey is taken from the tub, and put through the sieve into the whey leads.

The curd is then put into vats, and pressed down with the hand. The vats, being covered with cheese-cloths, about one yard and a quarter long, of fine canvass, are placed in the press for half an hour, when they are taken out and the curd cut into slices, and put into a mill fixed on the top of the tub, which *tears* it into very small crumbs, as small as vetches. This mill, which is of Mr. Hayward's construction, is a great improvement in the making of cheese, not only as it saves the dairy-maid the most laborious part of the process, that of squeezing and rubbing the curd into small crumbs with their hands, but as it allows the fat to remain in the cheese, which the hands squeeze out.

In its pulverized state, it is customary with most dairy-maids to scald the curd with hot whey; but Mrs. Hayward considers cheese richer, when made without scalding the broken curd, this washing the fat out of it. She, therefore, without scalding it, puts it into the vats, and presses it closely together with the hand, in filling them. In making double Gloucester cheeses, particular care is taken to press any remaining whey from the curd as the vats are being filled, and they are filled as compactly as can be done with the hand, being rounded up in the middle, but just so much so, as that the whole can be pressed into the vat. Cheese-cloths are then spread over the vats, and a little hot water is thrown over the cheese-cloths, which tends to harden the outside of the cheese and prevent it from cracking. The curd is now turned out of the vats into the cloths, and the vats being dipped into the whey to wash away any crubs of curd that may cling to them, the curd, inverted and with the cloth around it, is again put into them. The cloths are then folded over and tuck-

ed in, and the vats, as they are filled, are put into the press one upon another. The bottoms of the vats are smooth and a little rounded, so as to answer the purpose of cheese-boards, which, therefore, are only wanted for the uppermost vats, or when the other vats are not quite full. The vats are allowed to remain under the press about two hours, when they are taken out and dry cloths are applied, which with double Gloucester cheeses should be repeated some in the day.

PART III.

MISCELLANEOUS INTELLIGENCE.

Liverpool Salt for Butter.—This salt presents a beautiful appearance to the eye, has a powdery form and its colour is of snowy whiteness. These qualities are very inviting to purchasers, who are not particularly acquainted with its character. The Liverpool, or blown salt is prepared on the Western borders of England by boiling sea water or salt spring water, saturated with the rock salt of Norwich, in large, shallow, iron pans. It contains a mixture of foreign ingredients technically called slack and buttern, which unite with the salt, and render it unfit for use, except for culinary purposes. It is not used by the people in the neighborhood of Liverpool, either in preserving beef, pork or butter which is designed to keep any length of time. If butter is packed down with this salt, it is very liable to become rancid, soft and gluey, and otherwise much debased in its quality, so that in a few weeks it loses its agreeable taste and odour and is unfit for the table. Instead of using the Liverpool as is now too generally the practice, our farmers would receive a much higher compensation for their expense and labour in making butter, if they would prepare it with the coarse Turks-Island salt, which should be purified of all foreign ingredients by washing it, having it thoroughly dried and ground in a clean mill. It should be used in the proportion of about six pounds to every hundred weight of butter. Last week, a gentleman who lives forty miles from Portsmouth brought 400 pounds of butter into our market. It was made with Liverpool salt. On inspection, it was found to rank with No. 3 butter, and he obtained only *eight dollars* per hundred; whereas, prime butter was then quick at twelve dollars and a half. We have known of several other instances of the same kind within a short time. Thousands of dollars are lost to the farmers of New-Hampshire every year in consequence of the

inferior quality of their butter, which inferiority is to be attributed in part though not altogether, to the use of Liverpool salt in its manufacture.

State Herald.

A remarkable Specimen of Mimosa pudica, or Humble Plant.—Sir, I am aware that many may think it ridiculous to say any thing on this subject; but I do not think any one will who has taken like pains with myself to bring the plant to a tolerable state of perfection. Many people are satisfied with this plant if they can grow it one foot high, with a few leaves, just sufficient to show those who have never seen them that they close and drop on being touched. If this be all that is to be expected from it, it is not worth growing, as it is not, in this state, an object of beauty; and as most ladies and gentlemen are aware of its falling when touched, it is thought but little of. But when grown to a good size it is a beautiful thing; and it also looks much more curious to see branches of two feet in length falling down round the plant, than merely a few leaves. Those who have nothing more than a green house, as far as I am acquainted with it, I should think, could not obtain one so large and so full of flowers as the one I am about to describe; but those who can command from 50° to 60° heat through the winter may. My plant was raised last summer in a frame; and, after remaining in a green-house till the nights became too cold, it was removed to a pit of the above heat till about January, when it was put into a cucumber frame, where it remained as long as there was room for it; I, pinching the tops of the shoots off, to prevent their touching the glass. I then removed it, after shifting it into a flower-pot, to a house of about 70° heat, where it is at this moment in full bloom, and forms a bush upwards of three feet in diameter. It has several times this summer had upwards of 100 heads of flower buds and flowers on it at once. I am, Sir, yours, &c.—R. T. May 27, 1831.

Mimosa pudica, called the humble plant from its timidly shrinking from the touch, not unfrequently receives the appellation of "sensitive plant;" and very sensitive it is, even more so than the true sensitive plant, *Mimosa sensitiva*; a figure of which may be seen at table 25, of the *Botanical Register*: it and *M. pudica*, which is also figured in the *Botanical Register*, t. 941., are remarkably dissimilar plants.—J. D.—*Gard. Mag.*

The Wire Worms.—Extract from a communication from Mr. Tallant of Little Houghton, read at the last meeting of the meeting of the Northamptonshire Farming Society:—"white mustard seed will protect the grain from the wire-worm; and this fact I have demonstrated perfectly to my own conviction. I first tried the experiment on half an acre, in the centre of a fifty acre field of fallow, which was much subject to the wire-worm. The mustard seed being carried, the whole field was fallowed for wheat, and the half-acre that had been previously cropped with mustard was wholly exempt from the wire-worm; the remainder of the field was much injured. Not only was the half acre thus preserved, but in the spring it was decidedly the most advanced part of the crop; and the prosperous appearance which it presented caused me to repeat the experiment, by sowing three acres more of mustard seed in the worst part of a field of forty-five acres, also much infested with the wire-worm. The remainder of the field was sown with early frame peas, which, with the mustard seed, was cleared in the same week. The land was then ploughed for wheat, and I had the pleasure of noticing these three acres to be quite free from the worms, and much superior in other respects to the other part of the field, which suffered greatly. Thus encouraged by these results, I sowed the next year a whole field of forty-two acres, which had never repaid me for nineteen years, in consequence of nearly every crop being destroyed by the wire-worm, and I am warranted in stating that not a single wire-worm could be found the following year, and the crop of wheat throughout, which was reaped last harvest, was superior to any I had grown for twenty-one years. I am, therefore,

under a persuasion, that the wire-worm may be successfully repelled and eradicated, by carefully destroying all weeds and roots, and drilling white mustard seed, and keeping the good clean by hoeing."—(*Country Times*, Sept. 1831.)

The reason seems to be, that the wire-worm cannot eat the roots of the mustard, most probably from the acidity, and there being no other roots in the soil for them to live on, and no weeds or other plants than mustard permitted to grow during the season, the insects necessarily die of famine.—*Cond.—Gar. Mag.*

Large Asparagus.—A few days ago Mr. Grayson, the famous cultivator of asparagus, presented the Dutches of Bedford with a bundle of that delicious vegetable, consisting of 110 heads, and weighing twenty-nine pounds.—*Ibid.*

Enormous Cabbage.—There is now in the garden of Mrs. Diana Archbell of Healaugh, near Tadcaster, a red cabbage plant, which measures 13 feet circumference.—*Ibid.*

Barking the Stems of Fruit Trees and Vines.—My gardener here, who is reputed one of the best fruit gardeners of the district, and has been more than once strongly pressed to go to the neighbourhood of Paris, has, what he declares to be a never-failing method of greatly improving the quality and size of the fruit on apple and pear trees and vines. At the winter pruning which is here given in February, he cuts off with his common hooked pruning knife all the outer bark down to the liber of every tree above eight or ten years old; not so deeply, however, with the young as with the old trees. I am assured by some of my neighbours that this man's practice has never failed of being successful; and another Englishman who has tried it assures me that since he had his trees *nettoyes* (such is the term,) he has always had larger and better-flavoured fruit.—*Tourney en Belgique*, June 6, 1831.

The practice was brought into notice in Britain by Mr. Lyon of Edinburgh, about fifteen years ago, and is not uncommon in England, with apple and pear trees, and very general with regard to vines under glass.—*Cond.—Ibid.*

Large Seedling Pelargonium.—One raised by me, in 1828, from the Waterloo, is now five feet ten inches high, and the stem within five feet from the ground is three and a half inches in circumference. One branch contains eighty-five bunches of flowers, all out at the same time, and another nearly as many.—*Ibid.*

Extraordinary large Cauliflower.—In the beginning of April, 1830, I sowed the seeds, and in the last week in May I transplanted the plants; some into rather light soil, others into pure rotten dug and clay. It is to one from the latter I particularly allude. Though the whole of the latter were a good crop, the former clubbed exceedingly, and scarcely flowered. The dimensions of this plant were as follows: Circumference, 1 yard, 2 in. and nearly 15 in. in diameter; and, when fit for dressing, it weighed 94 lbs. The size of this plant I attribute to nothing but the soil, as the treatment I adopted was nothing out of the common. I am, Sir, yours, &c.—*Ibid.*

Change in the Colour of Flowers.—The *changing Hibiscus* has received this name on account of the remarkable and periodical variations which the colour of the flowers present. White in the morning they become more or more less red or carnation-coloured towards the middle of the day, and terminate in a rose-colour when the sun is set. This fact has been long

known, but we are totally ignorant of the cause. The following observations may assist to discover it, and give some useful ideas on the colouration of flowers.

M. Ramond de la Sagra remarked, in the Botanic Garden of Havana, of which he is the director, that, on the 19th October, 1828, this flower remained white all day, and did not commence to redden till the next day, towards noon. On consulting the meteorological tables which he kept with care, he found that on this very day, the 19th October, the temperature did not rise above $65\frac{1}{2}^{\circ}$ Fahr. whilst ordinarily it was at least 86° at the period of inflorescence of this plant. It would appear then that the temperature holds a place of some importance in the colouration of certain flowers. The experiments of Mr. Macaire have taught, that it seems to be connected with different degrees of oxygenation of the chromule, or colouring matter, contained in the parenchyma. Is this oxygenation altogether or in part, determined by the temperature? Can the colour of certain petals be modified by variations of heat? These questions require experiments.—*Arc. of Sci.*

Curious fact in the Economy of Bees.—When two or three distinct hives are united in autumn, they are found to consume together scarcely more honey during the winter than each of them would have consumed singly, if left separate. In proof of this remarkable result, the author states a variety of experiments to which he had recourse, and all of which led uniformly to the same conclusion. And, indeed, he shows positively, by a reference to upwards of thirty hives, six of which had their population thus doubled, that the latter do not consume more provisions during winter than a single hive does; and that, so far from the bees suffering from this, the doubled hives generally send forth the earliest and best swarms.—*Ibid.*

Winter Squashes.—To raise winter squashes, the following method is recommended:—Select a rich piece of ground, rather moist, not much exposed to the wind and free from shade. At the proper season, plough it well three times; dig holes in the earth about eight feet distant, sufficiently large to contain more than one bushel; put into each, a shovel three times full of strong manure and one pint of dry ashes or slacked lime. The compost taken from the hog-yard or slaughterhouse cellar, is preferable. Cover this composition slightly with dirt; after a few days, take a hoe, chop it over, and mix with it a sufficient quantity of earth to fill the holes nearly. Let this exercise be repeated two or three times in the course of ten, twelve or fourteen days, as the weather may be; and plant the seeds taken from large ripe squashes. The plants will soon spring up, and then the enemy will appear in the great armies—I mean, small striped and large black bugs; any thing that is offensive to the olfactory nerves of a human being, will retard their operations, but the only sovereign remedy is to take life. The plants, therefore, should be critically examined at least twice each day, and the bugs destroyed. Hoe them frequently, make the top of the ground in the form of a concave lens, and leave only three or four thrifty plants in each hill. The squash, like other vines, especially of the genus *cucurbitæ*, receives much of its nutriment directly from the rain, the air, and the dew; of course the leaves should be sustained in their natural position. To effect this object, place brush between the hills in every direction, just before the vines begin to spread; and, with the blessing of heaven, a large crop may be expected.

I am aware that this method of raising squashes requires much labour and persevering attention; but the cultivator will be amply compensated.—Last season I planted one hundred hills, and raised between 4000 and 5000 pounds, which, at the rate they are usually sold, would amount to more than sixty dollars. My yard was about eighty feet square.

Andover, Ms. Feb. 20, 1832.

OBSERVATOR.

N. E. Farmer.